

UNIVERSAL

# MODEL AIRPLANE NEWS

DEC.

1932

15¢

COURSE IN AVIATION FOR FIFTEEN CENTS A MONTH!



THE NEW HEATH PARASOL

STEW  
ROU

Plan Page No. 10.

# Now you can build IDEAL Model Boats

with Kits Designed by BOUCHER, INC.

## Scale Model Boat Fittings

A New IDEAL Department equipped to supply the needs of Model Boat Builders with a complete assortment of fittings and accessories. Note the low prices in the following list. If you do not find what you want listed here, write us your requirements. These are genuine BOUCHER fittings. Do not confuse them with cheaper and inferior types.

### BLOCKS



Single Blocks—Plain	
1 1/8 in.	.03 each
3/16 in.	.01 each
1 1/4 in.	.04 each
3 3/8 in.	.12 each
Single Block—Strapped	
1 1/8 in.	.05 each
3/16 in.	.06 each
1 1/4 in.	.06 each
3 3/8 in.	.07 each
Double Blocks	
1 1/8 in.	.03 each
3/16 in.	.05 each
1 1/4 in.	.06 each
3 3/8 in.	.08 each
3 3/8 in.	.09 each

### CLEATS

Brass—Flat Type	
3/4 in.	.04 each
Brass—Rough; Drilled	
3/4 in.	.10 each
15/16 in.	.12 each
1 1/8 in.	.15 each
White Metal	
5/16 in.	.04 each
3/8 in.	.05 each
15/16 in.	.05 each
1 1/8 in.	.08 each

### DEAD EYES

Hard Composition	
1 1/8 in.	.03 each
3/16 in.	.04 each
1 1/4 in.	.05 each

### CHOCKS

White Metal	
3/8 in.	.05 each
1 1/2 in.	.07 each
1 1/16 in.	.09 each

### GOOSENECKS

Brass—Rough	
7/8 in.	.10 each
1 in.	.12 each
Holler Type	
5/8 in.	.07 each
7/8 in.	.10 each

### BITTS

White Metal	
7/16 in.	.06 each
5/8 in.	.09 each
7/8 in.	.10 each

### BELAYING PINS

Brass	
5/16 in.	1 1/2 in.
20	.25

### PAD EYES

Brass—1 1/2 in., .50 doz.	
---------------------------	--

Order from above list  
Every item guaranteed as represented

On all orders under \$1.50, add 15¢ for Postage  
On all orders over \$1.50, add 10¢ for Postage

All Orders over \$3.00 delivered prepaid

SEND ALL ORDERS TO

Ideal Aeroplane & Supply Co., Inc.

20-24 West 19th St., New York, N. Y.

### STANCHIONS

White Metal	
7/16 in.	.02 Ball.....06
7/8 in.	.02 Ball.....10
1 1/8 in.	.02 Ball.....10
2 1/16 in.	.03 Ball.....08
2 1/8 in.	.03 Ball.....10

### BELLS

Wood Rim	
5 1/8 in.	.50 each
5 1/8 in.	.50 each
2 1/8 in.	.50 each

### WHEELS

Metal Rim	
2 1/8 in.	.50 each
2 1/8 in.	.50 each
2 1/8 in.	.50 each

### LIFE RINGS

5 1/8 in.	
1 1/8 in.	.60 each
5 1/8 in.	.60 each
3 1/4 in.	.10 each

### ENGINE ROOM TELEGRAPH

3 1/4 in.	
3 1/4 in.	\$.25 each
1 1/4 in.	.15 each
3 1/4 in.	.15 each

### AIRPORTS

Piano	
3 1/4 in.	.02 each
3 1/4 in.	.02 each
3 1/4 in.	.02 each

### CHAINS

8 Links to Foot	
10	.10 each
15	.15 each
21	.21 each
21	.21 each

### SPREADERS

4 x 3 3/8 in.	
5	.50 each
6	.60 each
6	.60 each
9 1/2 x 5 1/8 in.	.70 each

### LADEERS

Stamped Brass	
Per Foot	.50

### VENTILATORS

3 or 4 in.	
10	.10 each

### MAST RINGS

Diam.	
3/8 in.	.06
7/16 in.	.07
1/2 in.	.08
5/8 in.	.09

### TURNBUCKLES

1 1/2 in.	
3/2 in.	.05 each
1 1/8 in.	.05 each

### GAFF JAWS

1/2 in. or 5 1/8 in.	
3/16 in.	.10 each
1 1/8 in.	.10 each

### GOOSENECKS

3/4 in.	
3 1/4 in.	\$.15 each

### SAIL CLOTH

Square yard	
1 1/2 in.	\$.00 each

### RIGGING HOOKS

Per dozen	
2	\$.00 each

### EYELETS

Per hundred	
25	\$.25 each

### FLAG POLE SOCKETS

How	
Stern	.30 each

### STOCKLESS

2 in.	
1 1/8 in.	.60 each

### AUTOMATIC STEERING GEAR

for Sail Boats	
1 3/4 in.	\$.75 each

### Order from above list

Every item guaranteed as represented

On all orders under \$1.50, add 15¢ for Postage

On all orders over \$1.50, add 10¢ for Postage

All Orders over \$3.00 delivered prepaid

SEND ALL ORDERS TO

Ideal Aeroplane & Supply Co., Inc.

20-24 West 19th St., New York, N. Y.

### Order from above list

Every item guaranteed as represented

On all orders under \$1.50, add 15¢ for Postage

On all orders over \$1.50, add 10¢ for Postage

All Orders over \$3.00 delivered prepaid

SEND ALL ORDERS TO

Ideal Aeroplane & Supply Co., Inc.

20-24 West 19th St., New York, N. Y.

Order from above list

Every item guaranteed as represented

On all orders under \$1.50, add 15¢ for Postage

On all orders over \$1.50, add 10¢ for Postage

All Orders over \$3.00 delivered prepaid

SEND ALL ORDERS TO

Ideal Aeroplane & Supply Co., Inc.

20-24 West 19th St., New York, N. Y.

Order from above list

Every item guaranteed as represented

On all orders under \$1.50, add 15¢ for Postage

On all orders over \$1.50, add 10¢ for Postage

All Orders over \$3.00 delivered prepaid

SEND ALL ORDERS TO

Ideal Aeroplane & Supply Co., Inc.

20-24 West 19th St., New York, N. Y.

Order from above list

Every item guaranteed as represented

On all orders under \$1.50, add 15¢ for Postage

On all orders over \$1.50, add 10¢ for Postage

All Orders over \$3.00 delivered prepaid

SEND ALL ORDERS TO

Ideal Aeroplane & Supply Co., Inc.

20-24 West 19th St., New York, N. Y.

Order from above list

Every item guaranteed as represented

On all orders under \$1.50, add 15¢ for Postage

On all orders over \$1.50, add 10¢ for Postage

All Orders over \$3.00 delivered prepaid

SEND ALL ORDERS TO

Ideal Aeroplane & Supply Co., Inc.

20-24 West 19th St., New York, N. Y.

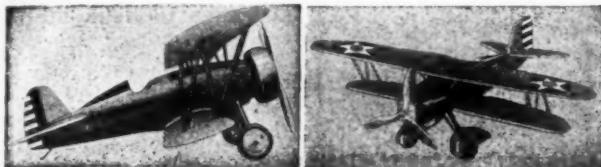
# IDEAL Models

*for*

## Christmas

**Get Them Yourself  
Give Them to Your Friends!**

Wouldn't your friends or relatives like an example of your hand-work for Christmas? Of course they would! Make Model Airplanes as presents this year. Select from these fine IDEAL Construction Kits; make your gift as economical or as expensive as you want to—this page offers a wide choice of selection. And how about making yourself a present of one or more of these wonderful Models? Pick the ones you want now and hustle along your order!!



### 6-in. Solid Balsa, Hand-Carved MINIATURE REPLICA MODELS

Beautiful, perfect Models of all the well-known ships, with every construction feature and all the details worked out in miniature. Each comes complete in an IDEAL Kit. Bodies are carved from solid balsa blocks; wings, tail assembly, struts, pontoons and other parts stamped on sheet balsa ready to cut out. Die-stamped aluminum props; finished wheels; coloring and decorating materials, cement, wire parts, sandpaper, etc., also included. A full-size three-view plan, with instructions, comes with each Kit.

#### 24 Models to Select from—

Curtiss Fledgeling  
Gee-Bee Sportster  
Laird Biplane  
Pitcairn Autogiro  
British S.E. 5  
Curtiss Hawk P6-E  
Curtiss Hell Diver  
Napier Supermarine

Spad Biplane  
F9C-2 "Akron" Plane  
Fokker Triplane  
Vought Corsair  
Sopwith Camel  
Lockheed Vega  
Rumpler  
Travelair

Albatross  
Boeing Fighter  
Howard Racer  
Pfalz  
De Havilland  
Nieuport Biplane  
Nieuport Amphibian  
Fokker D-7

**Any 2 Kits 60c**

Postage 10¢ Extra

**6 for \$1.50**

Postage 25¢ Extra

### 3-in-1 Combination Kits

### Three 15-in. Flying Models for \$1.50

The finest Kits possible to put out; complete in every respect, each Kit containing all materials, parts, fittings, full-size plans and instructions for building three 15 in. Flying Models. Remember, these are full-fuselage flying Models. Three different Kits to select from as follows:

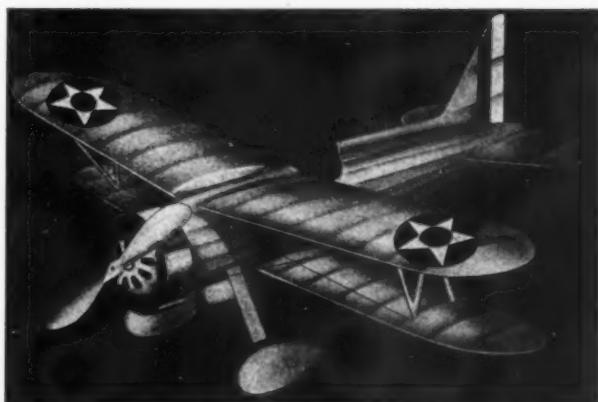
Kit No. 1 IDEAL Travelair Kit No. 2 IDEAL Fokker D-7 Kit No. 3 IDEAL Spad  
IDEAL Army Falcon IDEAL Lockheed Vega IDEAL Vought Corsair  
IDEAL Boeing IDEAL Waco IDEAL Lockheed Sirius

Each Kit \$1.50 (Postage 15¢ extra). Be Sure to State Kit Wanted.

Pick yours right now! You get three high-grade 15-inch Models for what one would usually cost. Each one is the neatest job you ever saw, and will fly wonderfully. Send your order at once and be sure to mention which Kit you want.

**Ideal Aeroplane & Supply Co., Inc.**  
20-24 West 19th Street, New York, N. Y.

Canadian Model Aircraft, 47 Hawarden Ave., Montreal  
(Canadian Prices are 40% Higher to cover Customs Duty)  
DEALERS.—IDEAL Airplanes will make money for you. Write for Dealer Discounts and Special Introductory Proposition.



### IDEAL-Designed 18-in. Flying Models

If you want beautiful, accurate, easily constructed and perfect flying Models, here they are! Thousands of Model Builders are getting a real thrill out of building and flying these Models.

**Curtiss A-8 Attack Plane  
S. 6. B. Supermarine**

**Curtiss F9C-2 "Akron" Fighter  
Boeing XP-936 Pursuit Plane**

The Models are faithful copies of the real ships, all essential details have been IDEAL-Designed into them so you can duplicate every feature in your Model. You can build them easily and quickly because IDEAL Kits contain everything required and more of the tedious work is done for you. Design patterns are printed on balsa ready to cut out; all wire and metal parts are supplied fully finished and ready to use. New IDEAL machine-cut balsa props are included on all except the A-8. You need only sand them smooth and attach the fittings. Liberal quantities of cement model dope, rubber, silk tissue and other supplies come in each Kit; and all balsa strips are accurately cut to length and thickness.

**\$1**

### Complete Construction Kits

**EACH  
Plus Postage**

Get one or more of these Kits and build a Model Airplane for a Christmas present for your best friend or for yourself. Each Kit also contains a Full-Size Plan with Instructions for building everything so complete you cannot help doing a good job!

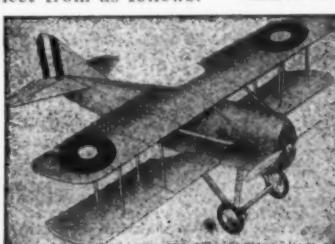
Get started right away. Order one or more Kits at once. If you order one Kit, send \$1.15 (15¢ for postage). If you order two Kits, send \$2.25 (25¢ for postage). If you order three or more at one time, we will pay the postage.

### Send 5c for Catalog New Edition—Just Out!

Contains full descriptions of all IDEAL Model Airplanes, Construction Kits, Ready-to-fly Models, Miniature Models, Large and Small Scale Flying Models and many others. Also buy list of Materials, Parts, Accessories and Supplies. Your Model Library is not complete without this Catalog. Send 5c for a copy now; or a copy will be sent free with your order for any of the items on this page.



Postage  
15¢ Extra



UNIVERSAL

# Model AIRPLANE NEWS

Vol. VII

No. 6

Edited by Charles Hampson Grant

## CONTENTS

DECEMBER—1932

HUMAN CANNONBALLS.....	By Lieut. (j.g.) H. B. Miller	6
MAJOR JAMES McCUDDEN, MASTER OF MANEUVERS.....	By F. Conde Ott	9
BUILD A NEW HEATH "PARASOL".....	By Jo Howell	10
THE AERODYNAMIC DESIGN OF THE MODEL PLANE.....	By Charles Hampson Grant	15
THE WEDELL-WILLIAMS RACER, MODEL 44.....	By Stockton Ferris, Jr.	17
THE AGO FIGHTER.....	By Walter Westburg	17
AIR-WAYS—HERE AND THERE.....		18
STRANGE FACTS OF AVIATION.....		22
AVIATION ADVISORY BOARD.....		23
CAPT. PAGE, U. S. NAVY RACER.....	By Avrum Zier	26
BIDDING TO CONQUER THE STRATOSPHERE.....	By Fletcher Pratt	27
"IKE" IS HERE FOR YOU TO BUILD.....	By Jo Howell	29

### In Our Next Issue

Our old friend, Jack Clark of Portland, Oregon, presents plans and instructions for his remarkable "Parasol" model. This model is especially designed for flying.

### Learning to Soar in Germany

By Bernard Flinch gives a graphic description of how the author learned to master the tricky wind currents of the Rhön Mountains.

### Solid Scale Stinson Model R

Plans and instructions to build a beautiful model of this famous transport plane by Burton Kemp.

### Model Radial Engine

Major H. W. Landis, E.M.E., gives detailed plans to build a three-cylinder Radial Compressed Air Engine as a pastime on winter days.

Other features such as The Aerodynamic Design of the Model Plane by Charles Hampson Grant, a war ace story by Harry A. Keller, 3 view drawings by Stockton Ferris, Jr., and Avrum Zier, make this an issue you cannot afford to miss.

Order your copy of UNIVERSAL MODEL AIRPLANE NEWS from your newsdealer now, or send \$1.65 for your year's subscription to this office, 125 West 45th Street, New York City.

Published Monthly by JAY PUBLISHING CORP., Myrick Bldg., Springfield, Mass.  
Editorial and General Offices, 125 West 45th Street, New York City.

George C. Johnson, President  
J. W. LeBaron, Advertising Manager, 125 West 45th Street, New York, N. Y.  
Entered as second-class matter June 5, 1929, at the Post Office at Springfield, Mass., under the Act of March 3, 1879.

Copyright, 1932, by JAY PUBLISHING CORP.  
Price 15c a copy in U. S. and in Canada. Subscription price \$1.65 a year in the United States and its possessions; also Canada, Cuba, Mexico and Panama.  
All other countries \$2.50 per year.

Chicago Advertising Office: 333 North Michigan Ave., C. H. Shattuck, Manager.  
London Agents: Atlas Publishing & Distributing Co., Ltd., 18 Bride Lane, London, E. C.  
Contributors are especially advised to be sure to retain copies of their contributions, otherwise they are taking unnecessary risk. Every possible effort will be made in our organization to return unavailable manuscripts, photographs and drawings (if accompanied by postage), but we will not be responsible for any loss of such matter contributed.



# Most Sensational Kit Values Ever Offered!

Take your choice of Selleys' Special Holiday Bargains!



**REPLICA KITS**  
**Curtiss Navy HELLDIVER**



**Curtiss Army HAWK Kit**



**Curtiss Army FALCON \$1.50**  
Span 12", Length 9". Colors, khaki and orange.  
Plans alone 25¢

**Lockheed SIRIUS Kit \$1.50**  
Span 12", Length 7½". Colors, purple and silver.  
Plans alone 25¢

**PERFECT CHRISTMAS GIFTS!**

Study this beautiful array of Selleys Model Airplanes. Choose from the world's best designed, quality-built construction sets! Never has Selleys offered such outstanding values! Never have you had the opportunity to secure Selleys kits for so little! Order NOW! Make the holidays "happy days"!



**Official Curtiss CONDOR \$7.00**  
Span 34", Length 21¾" KIT Postage 25¢  
Plans alone 75¢

**Official Mystery S  
TRAVELAIR KIT \$5.50**  
Span 25", Length 17¼" Postage 25¢  
Plans alone 75¢

**Official Army HAWK \$5.00**  
Span 25", Length 17¼" Postage 25¢  
Plans alone 50¢

**OFFICIAL HELLDIVER  
NAVY KIT**



All kits contain wood, cement, paper, dopes, parts, plan and all the materials necessary to build and finish a model as illustrated.



**WARTIME KITS**  
**ALBATROSS**



**FOKKER D-7 KIT**



**SPAD KIT \$2.00**  
Span 12", Length 9¾". Colors, green, cream and yellow. Plans alone 25¢

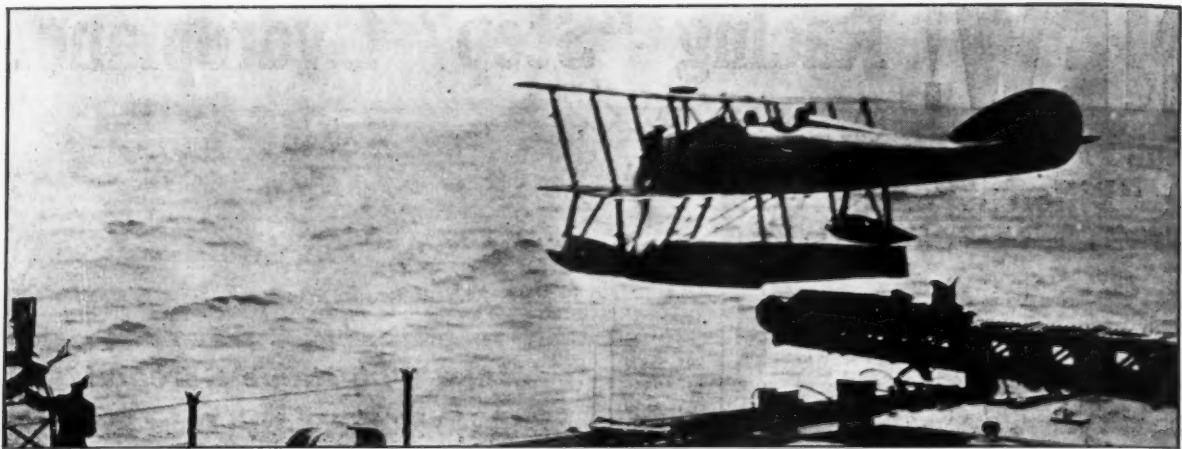
*Send 10¢ for catalogue illustrating 1000 items*  
Selleys maintains the largest exclusive Model  
store in Greater New York  
Open every week-day until 9 P.M. Until after holidays

**GUARANTEE!**

All SELLEY Construction Sets have our unqualified guarantee of satisfaction or your money refunded. Every SELLEY Kit comes to you complete with a scientifically designed, accurate plan and all materials necessary for the building of a perfect scale reduction replica of the original airplane. You can buy in confidence from SELLEY."

**SELLY MFG. CO., INC.**  
1377 GATES AVE., BROOKLYN, NEW YORK





Official Navy Photograph

A war bird takes the air from a battleship's catapult at sea

**L**EANING half out of his cockpit, the observer of a seaplane is intently watching the rough sea thousands of feet below. Now he peers more closely as though he were waiting for some premeditated event to occur. Away below is a tiny tugboat steaming forward with a long trail of target rafts in tow. This, however, does not appear to be the immediate object of interest to the aviator.

All at once the waters surrounding the targets break into huge geysers of spray and foam. It is as though some tremendous subterranean explosion had taken place to churn the seas into a mad swirling of green and white.

The alert observer takes but a moment's glance at the phenomenon and his hand begins to pound out a furious crescendo with a radio key. He is reporting to a battleship the result of its last salvo. The firing ship is steaming at full speed so far in the distance that her spotters in the battletops are unable to see where her shells are falling in relation to the target. It has thus become necessary to resort to the aviator sitting high above the target to observe the gunfire and make any necessary corrections to the ship by means of radio.

It is only in this manner that the full efficiency and accuracy of the mighty guns carried on our battleships can be utilized. Without the assistance of aviation, firing at long ranges used by modern gunnery would be impossible. The horizon is no more the limit of man's visibility.

Nor is the observer pictured above alone, for his plane is flying in formation along with the aircraft from the many other men-of-war. Each of the ships must have her eyes projected far from the decks. Of course, care must be taken that the formation does not fly in the line of the trajectory of the shells which reach a very high altitude when fired at long ranges.

**A**NOTHER type of vessel, the scout cruiser, makes full use of seaplanes. As its name indicates, its mission is to scout and search through certain definite areas in an effort to locate an enemy force. While the speed of the ship makes it a most effective agent in covering the largest possible area, it is obvious that the use of three or four fast scouting planes would enormously in-

## Human Cannonballs

### Interesting Facts Surrounding the Operation of Airplane Catapults Used on Uncle Sam's Battleships

By Lieut. (j.g.) H. B. Miller

crease the efficiency and effectiveness of the cruiser. With

clear weather and a reasonable degree of visibility, the use of aircraft will permit this type of vessel to cover from three to four times as large a space as she could do unaided. Hence, the airplane is quite as essential to the cruiser as it is to the battleship.

In 1924 the Army was making its difficult Round the World Flight. The four planes had come to the last ocean crossing—the Atlantic—before completing their memorable flight. Poised in the Faroe Islands they were ready to make the treacherous and foggy passage above the cold waters separating them from Iceland. The United States Navy posted several vessels across this lonely stretch of water to assist any of the fliers who might be forced down. The Italian pilot, Locatelli, also wished to cross the Atlantic and decided to take advantage of the safety offered by the station ships posted en route. Three of the Army fliers arrived at their destination after a terrific struggle with the elements, while the fourth was forced down but fortunately picked up by a cruiser. The foreign pilot, however, disappeared and remained lost for several days before the planes catapulted from a cruiser sighted his flying boat. It is entirely likely that he and his crew would have perished had not the cruiser carried seaplanes.

**T**HE construction of both the cruiser and the battleship at present is such that they cannot mount flying-on decks for use of landplanes. It thus becomes necessary to use seaplanes which can land in the water alongside the vessel at the end of its flight and so be hoisted aboard to be prepared for further flights.

One might think that all that would be necessary to operate these aircraft would be to hoist them over the side and permit them to take off from the water. While this is possible in well protected waters the normal open sea with its huge swells is ordinarily far too rough. If the water is choppy, the spray flies into the carburetor, thus choking out the engine and preventing it from developing its full power. If swells are present, the craft follows their contour while attempting to take off and is prevented from attaining the necessary speed for flying.

If the seaplane could be sent aloft in some manner, it would have little difficulty *landing* in the roughest seas. It is to be expected that a certain proportion of such landings will result in damaged planes, but providing the aircraft has accomplished its mission, this will not restrict their use. As a matter of fact, skilled aviation personnel can land their seaplanes in astonishingly rough waters with little or no damage. Thus, it appears that landing the planes at sea offers slight difficulties—rather the problem becomes that of developing some method of permitting the craft to take off in the face of the rough seas.

Our Navy has been working on this difficulty since 1911 and has evolved a most efficient device for launching seaplanes off the deck of a vessel regardless of the weather. This machine, the catapult, has made possible the use of aircraft with types of vessels other than the airplane carrier and as such is of the utmost importance to our naval forces.

The catapult accomplishes its purpose by giving an airplane flying speed in a relatively short distance and since this space can be provided aboard ship, the aircraft can be sent into the air without ever touching the water. Naturally the force necessary to give a heavy plane flying speed in such a limited space as is offered by a ship must be tremendous. The physical facts of a catapult are these: in a distance of about fifty feet the plane is given a speed of 60 miles per hour in less than two seconds. These are unbelievable figures especially when one paces off a similar distance and attempts to visualize anything reaching a speed of a mile a minute in such a short run.

**T**WO different types of energy are most generally used in modern catapults. One utilizes the power stored up in compressed air, while the other uses the force which can be obtained from some slow-burning powder, such as cordite. Less used sources of power are hydraulic and the energy which can be stored up in a fast revolving and heavy flywheel. These latter methods have been successfully used although they are not so much in favor.

The airplane to be catapulted is mounted on a small car which in turn slides down the smooth tracks of the device. The car is held down to the track by means of flanges, for otherwise a side wind might conceivably blow

it and the plane off the catapult. The top of the car forms a cradle which receives the pontoon of the seaplane.

In turn the plane is secured to the car by means of wire straps leading from the pontoon. It is essential that this be done, for otherwise the aircraft would lift off the catapult at any time it reached flying speed. If this were permitted, it might become fouled with some portion of the ship's structure and so crash. It is only when the car reaches the end of its run that the straps to the pontoon are automatically released, thus permitting the plane to continue on in free flight pulled by a powerful engine.

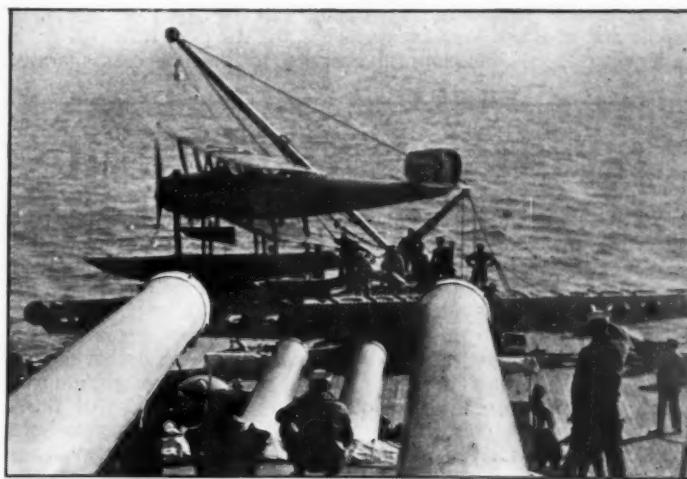
The car is stopped at the outer end of the track by means of hydraulic brakes. In this way it can be retained for all catapult shots. Not so in the early days of naval aviation.

for then the catapult car was permitted to continue off the track and fall into the water. A line secured to it was then hauled in and the device was recovered after much hard work.

Power is applied in a very simple manner. A steel cable is passed continuously around two multiple pulleys situated quite close together. One end of the wire rope is carried out to the end of the track where it passes through a block and returns to the catapult car where it is secured. The other end is made fast to the shaft of a piston which operates inside a cylinder. When air under very high pressure is led to the cylinder through a heavy valve it begins to push the piston out. This in turn separates the two pulleys which serve to convert the power into speed which is transmitted to the catapult car. It is seen that by regulating the amount of compressed air which enters the cylinder as the piston progresses down its course the speed of the plane can be controlled. As a matter of fact the device is adjusted to give a very slow start to the shot. A constant acceleration is then applied which greatly speeds up the car until flying speed for the aircraft is reached.

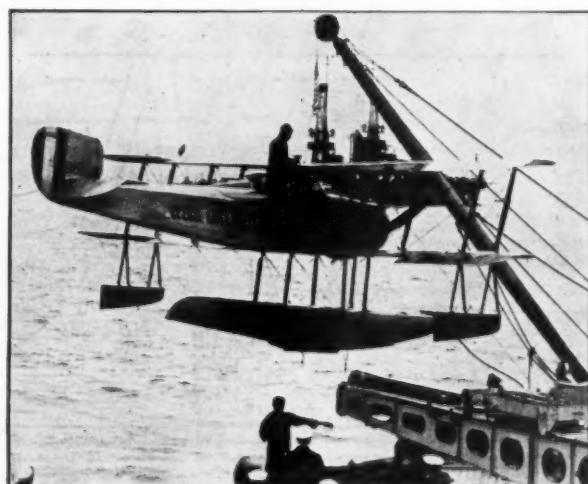
**A**SIMILAR system is used when powder is to be the propellant. A large cartridge of the desired explosive is inserted into what in effect is a gun which is plugged up by a piston. When the trigger is pulled the expanding gases push the piston down its cylinder and so give the speed to the plane.

The pilot of a plane being catapulted, however, does not have time to think of the mechanics of the catapult. He has his hands full controlling the plane. Once the



Official Navy Photograph

"Bang"—Down the track for a "jump off"



Official Navy Photograph

Hoisting 'er aboard after a flight

shot has begun, his mind is on the alert for the unusual to happen. Fortunately, few accidents of any consequence have ever occurred during this maneuver. Occasionally full power may not be applied to the car which will slide slowly down the track dropping the plane neatly into the water at the end. On one occasion the pontoon was torn loose from the plane on one side and remained dangling while the aircraft took the air successfully. Though the pilot was forced to crack up his plane he was not injured.

If a plane is unusually heavily loaded it may settle after leaving the catapult and at times may even touch the water. From here it will usually bounce into the air

to stay. This is generally true only of the catapults mounted low on the deck of a vessel. Those installed on the high turrets provide sufficient altitude for the pilot to dive his craft, if necessary, to pick up additional air speed.

The pilot who is to make a "shot" is very careful to warm his engine up thoroughly for he does not care to take a chance on being set down in a rough sea. The catapult officer checks every part of his machine to insure the safety of the aviators. At last everything is ready and the pilot turns his engine up full-out once more just to make sure it is operating. (Continued on page 38)

## A Catapult for Your Model Planes

**D**O you ever have any trouble in hand launching your planes? Did you ever want to take flight pictures of your model, but had no assistant to fly it? Did you ever want to take close up r.o.g. shots without an uncertain ground run, or a human figure lurking in the background?

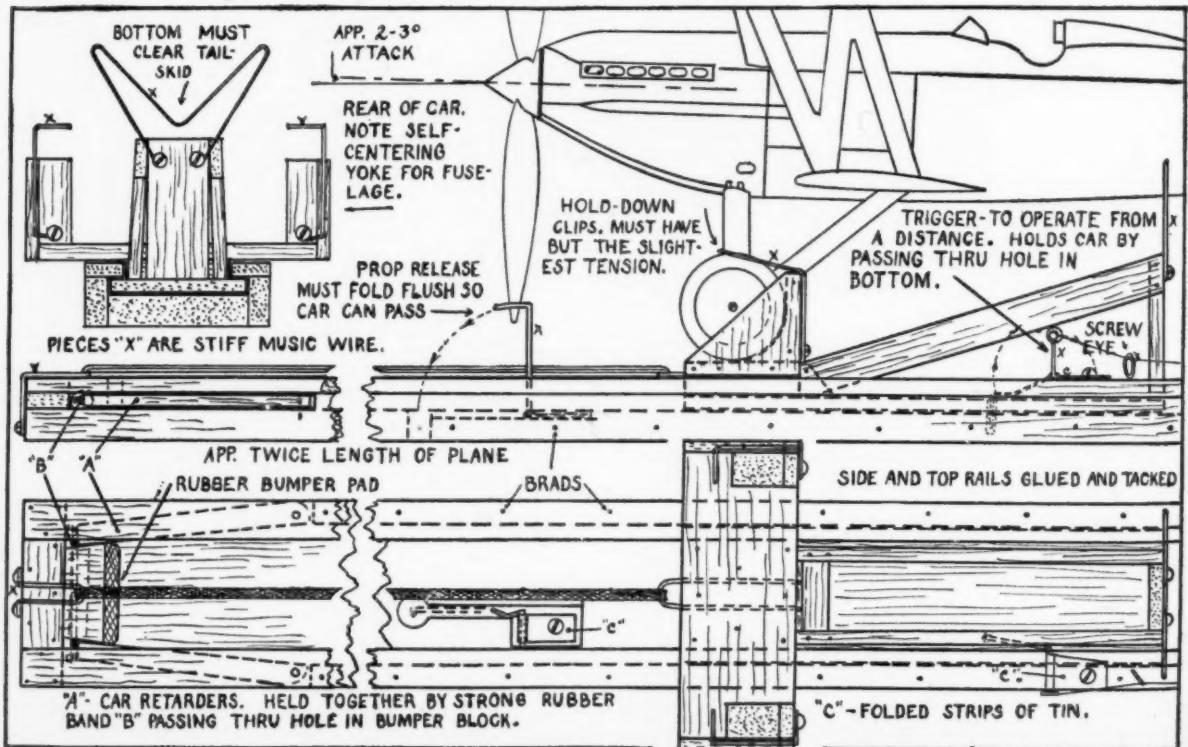
This catapult will solve all of these difficulties. In addition, you will have the pleasure of watching the entire flight of the plane, which you miss from the close quarters necessary in launching. A light string may be run from the trigger of the catapult to whatever position you wish to occupy.

Briefly, the catapult consists of a board base, a track formed by wooden strips, a car which slides in the track grooves with an attached cradle to support the model plane, a rubber band to propel the car, a bumper with friction-arresting device and a trigger release.

All parts of the catapult should be made of some wood such as pine. Dope out the drawings carefully before you begin. It will save a lot of errors. Note particularly the two hinged car retarders and the prop release. The retarders check the motion of the car at the

end of its run and thus do away with destructive shocks. As an added precaution the car hits a sponge rubber pad at the very end. The prop release is necessary to keep the rubber in the plane from unwinding. When the car starts moving, this folds into a groove made in the board to receive it. The part that touches the propeller is bent in a shallow vee so that the prop will hold it upright. It may be necessary to fasten upright side panels to the car, close to the outer side of the wheels so as to prevent the model from slipping sideways due to the pressure of the propeller on the propeller stop.

No measurements are given, merely proportions, as the catapult should be built to fit the plane you intend to launch in it most often. However, it will be about two and one-half times the length of the plane, as the car should slide approximately twice the length of the plane it is launching. It is needless to point out that the best results will be obtained by launching the models into the wind. A few trials should suffice to give the model builder the correct location on the plane for the application of power. Get busy and let's see what luck you have "shooting" your models.



**T**HE gods of fate play strange pranks on mice and men. Often in the hour of greatest need, they smile. Again, by the merest twist of fortune, they will turn away and, in a twinkling, upon the roost of fortune where once the bird of victory perched, there rests another and more sombre fowl, the messenger of death.

Why do they smile, these Gods of Fate, then frown  
And all upon the one and same  
Whom once they graced with triumph's crown  
But then forget, and with the scythe of death,  
Banish them forever from the game.

Major James Byford McCudden held "hands" like these when he sat in on the great war game deal. On the credit side he had 58 official victories duly earned by a display of ready resourcefulness and cool courage, in some of the meanest air fights on the western front. These victories were the echoes of laughter as the gods urged him on in mirthful glee.

Then came the 9th of July in 1918 with the four long years of war not three months more to go. James McCudden had just been elevated to his new rank of major in fitting reward for his splendid services. The rise in command had been bestowed upon him on the British side of the Channel, where he had gone to rest on a short leave. He was on his way back to take over his new command when engine trouble forced him to seek a landing in strange country in northern France. McCudden made what he considered to be the necessary repairs and then set out again to rejoin his troops. Hardly had he risen from the ground of the uneven pasture when the balky machine again went out of control. This time the Major crashed with fatal results, ending ignominiously a brilliant career of invaluable service to the Allied cause.

A dozen facts in the records testify to the high place McCudden held in the ranks of the aces. A few of them will suffice, in brief review, to show the true quality of the man.

When the German holder of the world's championship at air dueling crashed in April, 1918, the place of honor in the ranks of both the Allied and Teutonic forces together went to Major McCudden. His brilliant record of achievements lifted him to the pinnacle of fame in this most hazardous of games and he held his treasured place

# Major James McCudden Master of Maneuvers

**One of the Greatest War Aces, Terrorizing the Enemy Front for Four Long Years, Downs Fifty-Eight German Planes**

By F. Conde Ott



Keystone-Underwood

**Major James Byford McCudden**

until his leave of absence from the ranks.

During this period of idleness, the intrepid Canadian, Bishop, passed him in the point

score with a mark of 72. McCudden's subsequent crash, of course, left his own figure at 58, a highly prized total in itself and one not even closely approached by

many other daring aviators who saw more days of service in actual combat than this accomplished British major.

What qualities did McCudden have to amass this mighty mark? For one thing, he was born and raised a soldier. His father was a warrant officer in the Royal Engineers and little James first saw light of day from the barracks at Chatham, in March, 1895. At the tender age of 15 he was already enrolled in the British army as a bugler. Enlisting as a private with the very first forces that went into France at the outbreak of hostilities, McCudden saw service from the start. He entered the field of aviation at the battle of Mons. Here, because of his ability as a mechanic, he was detailed to assist some of the flyers with their machines. Just one of fate's whims.

LIKE most of his comrades in the trenches, aviation held an almost inexplicable lure for McCudden and it was not long after the fates had thrown him in with the new service he so much revered that he was a part of it, flying over the front as a mechanic with occasional

duties, at other times, as an observer.

In this latter post, he immediately established himself by extreme accuracy and intuitive qualities as shown by his reports. This valuable asset, combined with his great coolness and rare judgment in stress of need and emergency, quickly labeled him as one destined for full time service in the air forces with the exacting demands it placed upon its members.

These requisites, together with a real personal charm, won him not only a host of admirers but also friends, through whom McCudden was soon offered the highly coveted permission to learn to fly himself. This art was quickly mastered and the young soldier, now a lieutenant, was soon winging his way over the front in his own ship. He immediately began piling up victories in his own cool and precise way and was well up among the leaders in his newly selected field.

McCudden was imbued with an almost insatiable desire to hunt and shoot down (Continued on page 42)

# Build a New Heath "Parasol"

THE new Heath Parasol, which but recently received government approval, forms an interesting subject for model builders everywhere. The Heath is an outstanding example of the American sport plane, holding records in almost every field it could enter.

The flying scale model of this plane has a wing span of  $23\frac{1}{2}$  inches and a length of 13 inches. When completed, ready to fly, it weighs about  $1\frac{1}{2}$  ounces.

## General

This model was designed as a model from factory drawings of the large plane. The  $\frac{3}{4}$  scale was selected because it lends itself most naturally to model building and flying. Models made to this scale are, in most cases, neither too large to build nor too small to fly, and in addition, when a group of them are collected, they are all in proportion to each other, making them look natural.

All balsa construction is used. The writer feels that inasmuch as the plane is not intended for a speed model, balsa is more than strong enough for the job. All the wing tips and the tail surfaces are cut from  $1/16$  flat balsa with a sharp razor blade, preferably a double edged blade broken in half and a piece broken off the end of that, giving a sharp point. The curved outlines are traced from the drawings onto tracing paper. This is then cut carefully along the edge to be followed, and placed over the balsa with the *direction of the grain running as shown in the drawings*, and the wood cut.

The best feature of this method is: an exact outline of the wingtip or other part is to be had, an almost impossible feat when working with bamboo, and a very much lighter part. Some strength is sacrificed, perhaps, but this is negligible, in the light of what is gained.

Before beginning operations, the drawings and the accompanying directions should be studied carefully, for while you may be an experienced model builder, there is generally something to be gained by a study of these things beforehand.

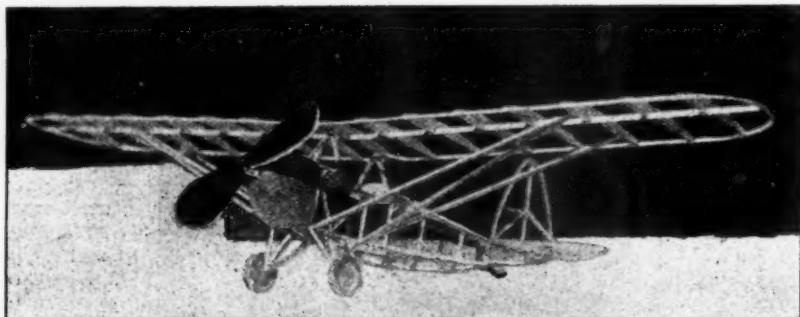
## Fuselage

IT will be noticed that this model has no motorstick. For this reason the fuselage is most important and should be constructed with great care.

Select a soft flat board to work on, and pin the drawings down on it. Work from the drawing, and there will be fewer mistakes. Mark the four longerons with a soft, sharp pencil and lay the two upper ones side by side. Cement the vertical braces that are longest, to the longerons, making both sides at once. Next cement the lower longeron to these. Do not bend the lower strips for

These Instructions and Plans Will Allow You to Build a Beautiful Flying Model of One of the Latest Light Sport Ships

By Jo Howell



The complete uncovered model, showing construction

the rear until the front is well dried. When finished you should have two complete fuselage sides with the top longerons together. This method keeps these parts straight, and is faster than usual.

Cut the curved parts for the top and bottom of the fuselage, and cement them on, working on the top side first. Line them up carefully, again working from the front to the rear. When they are dried thoroughly cement in place the top and bottom stringers. Lastly place the rear post and

draw all the stringers and sides together.

Cut the landing gear struts to the exact size shown on the front view plan, and cement them on. Use hard balsa for these as well as for the brace that goes just in front of them. Bend the wire parts for the axles, tailskid and the prop hook and cement them in place. The prop hook is glued to a balsa plate that is flush with the sides of the fuselage and fits just between the top and bottom longerons at the point shown in the drawing. Cut the two nose pins from number 20 or 24 wire and cement them in place using plenty of glue.

## Wings

The wings are made directly on the drawing as was the fuselage. For the left half of the wing, trace the drawing on the right half and reverse it, or use the left half as it is. Cement the ribs in place on the center spar first. Complete the whole wing before breaking in the center slightly for the  $7/16$ " dihedral. The short center rib is made at the same time as the rest of the ribs, as are the two shorter end ribs and are sanded to shape when the assembly of the wing is completed.

## Tail Surfaces

These parts are also made on the drawings and should give no trouble. All the outside edges are sanded to a regular roundness. Do not cement any of the parts to the fuselage until they are covered.

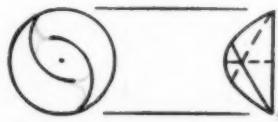
## Motor Block

The motor block is made from solid balsa and is therefore heavier as a unit than the rest of the plane's parts. Two blocks are used, one  $21/32 \times 1\frac{1}{8} \times 1\frac{9}{16}$ , and the other  $1 \times 1\frac{1}{8} \times 1\frac{9}{16}$ . Obtain two blocks that are slightly larger than this and sand them to the correct size. Remember that they are to be the given size when finished, so it is better to leave them a little larger than the above dimensions and sand them down when the block is completed. Place a small dab of cement in the center of the two blocks, taking (Continued on page 36)

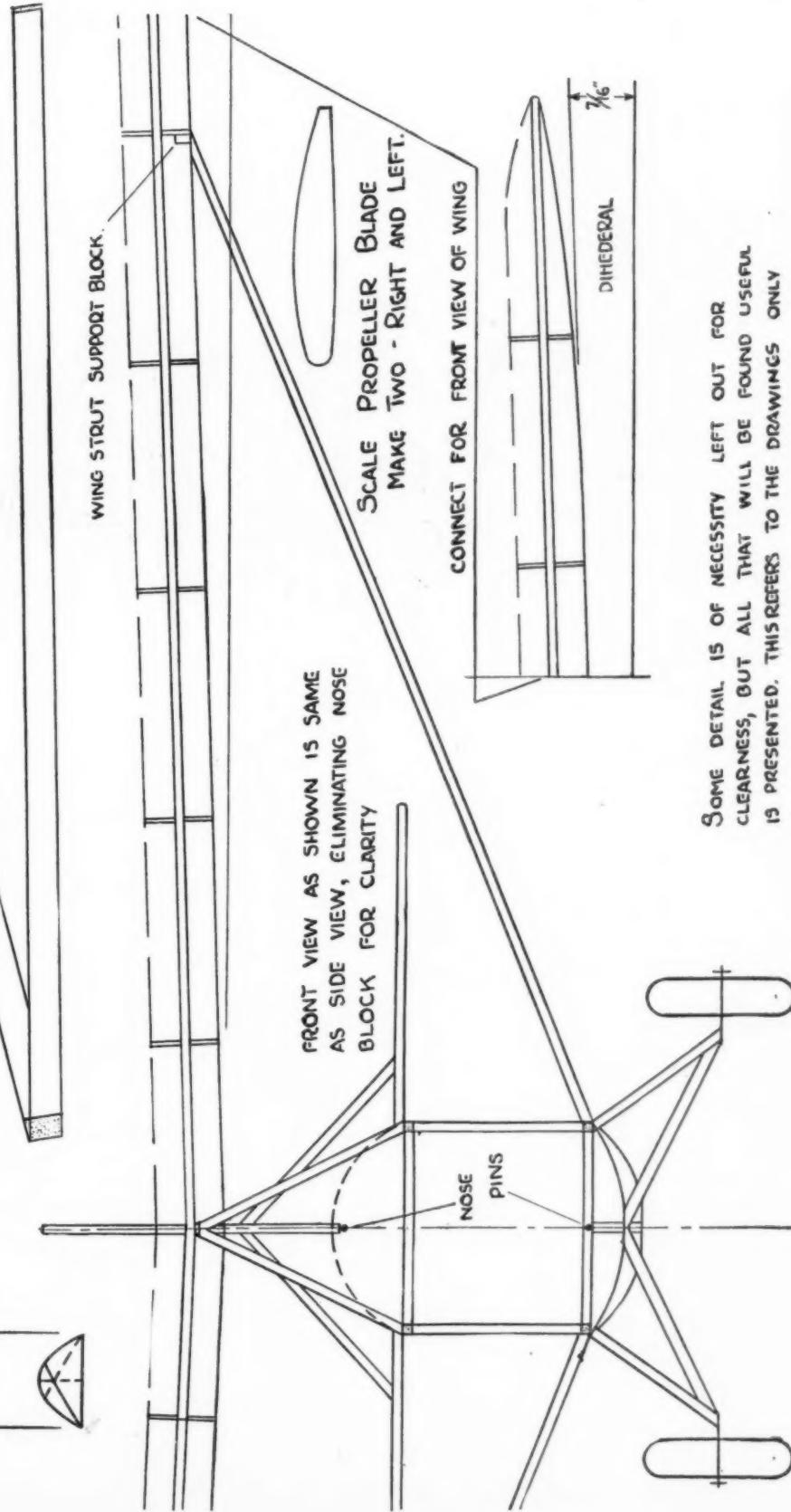
PROP HUBS - MAKE OF WHITE PINE. THEN MAY ALSO BE PURCHASED.

### WING STRUT

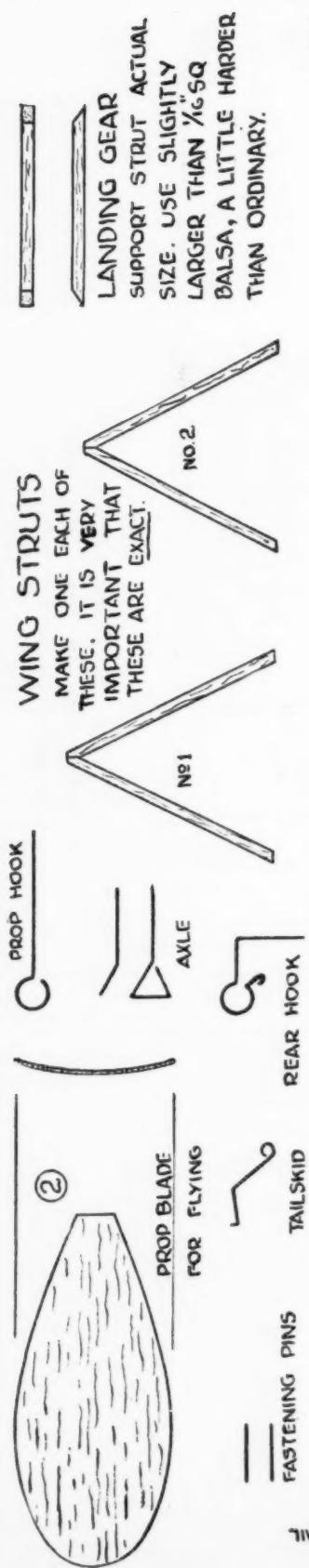
DRAWING SHOWS STRUT FOR RIGHT SIDE OF PLANE-LOOKING FROM TAIL TO NOSE. MAKE (2) LEFT AND RIGHT.



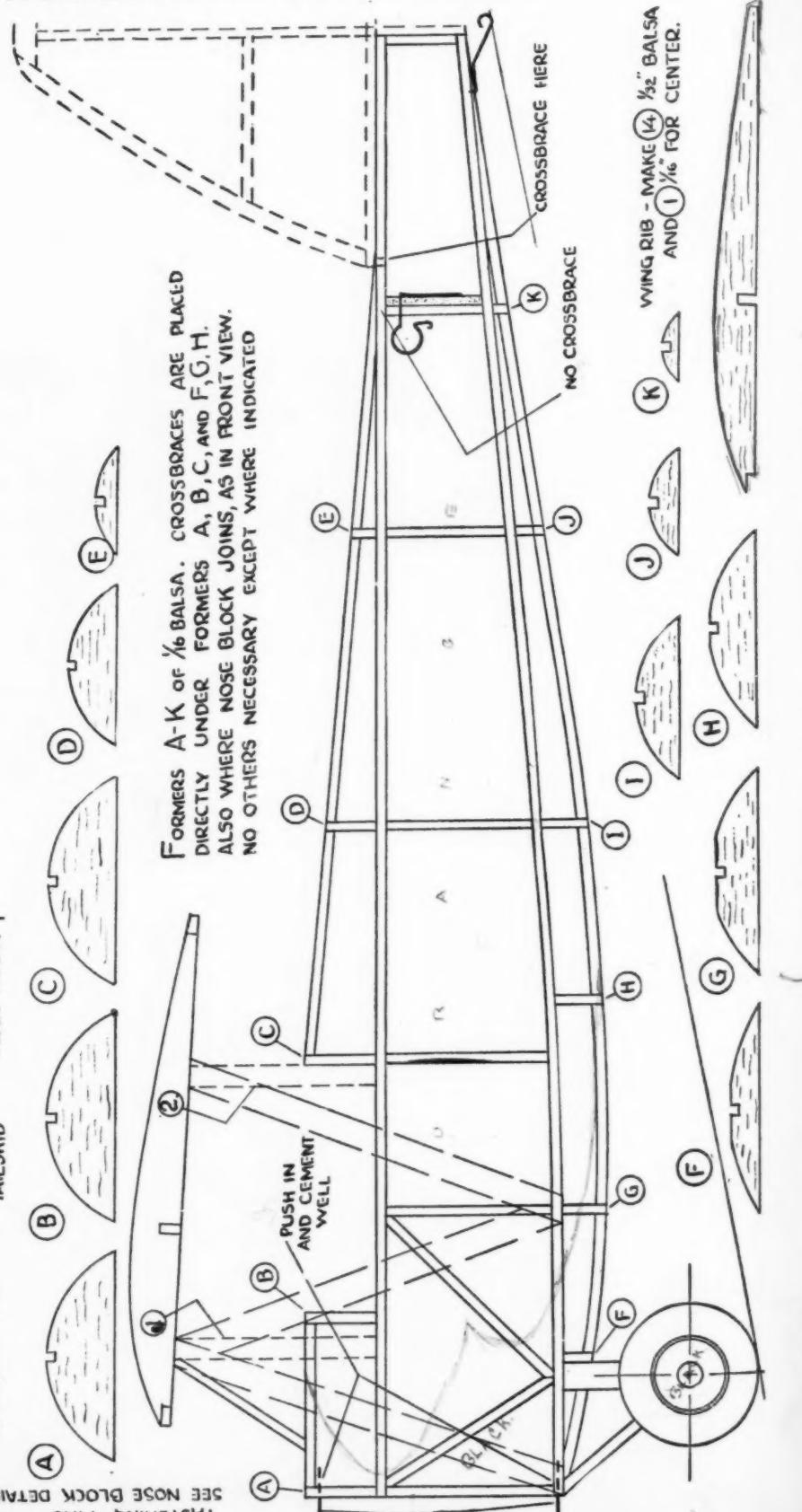
THIS SIDE CONNECTS WITH FUSELAGE

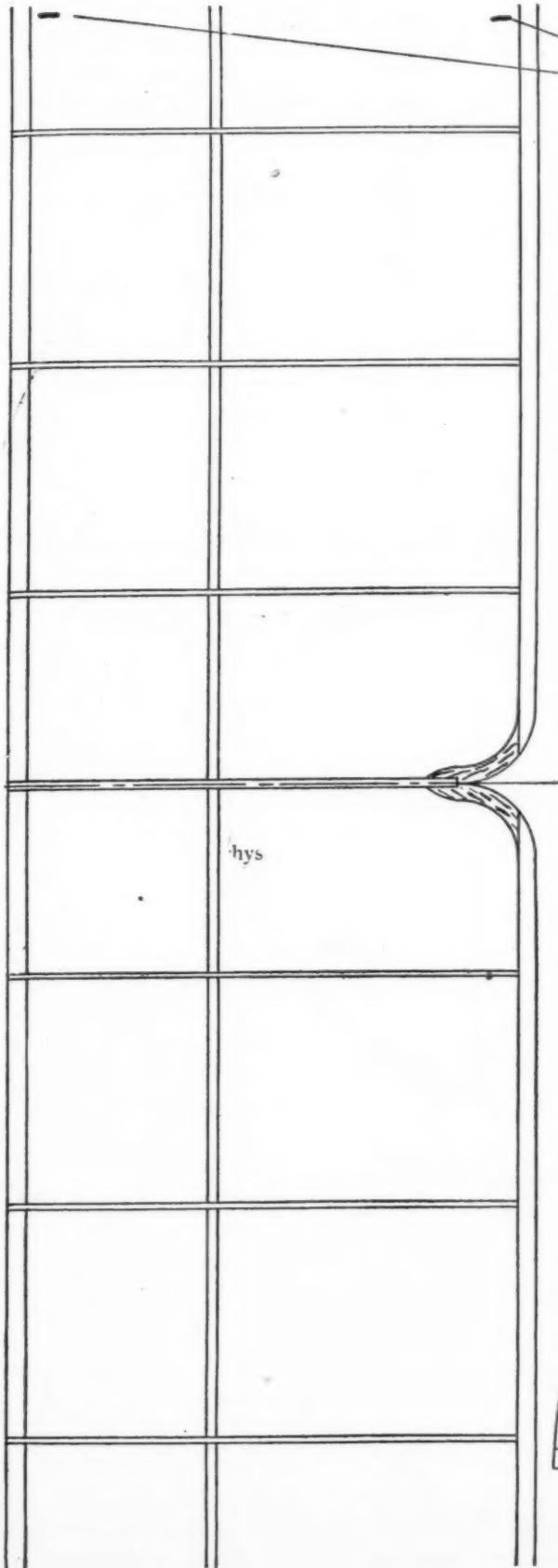


SOME DETAIL IS OF NECESSITY LEFT OUT FOR CLEARNESS, BUT ALL THAT WILL BE FOUND USEFUL IS PRESENTED. THIS REFERS TO THE DRAWINGS ONLY



SEE NOSE BLOCK DETAIL -  
FASTENING PINS -

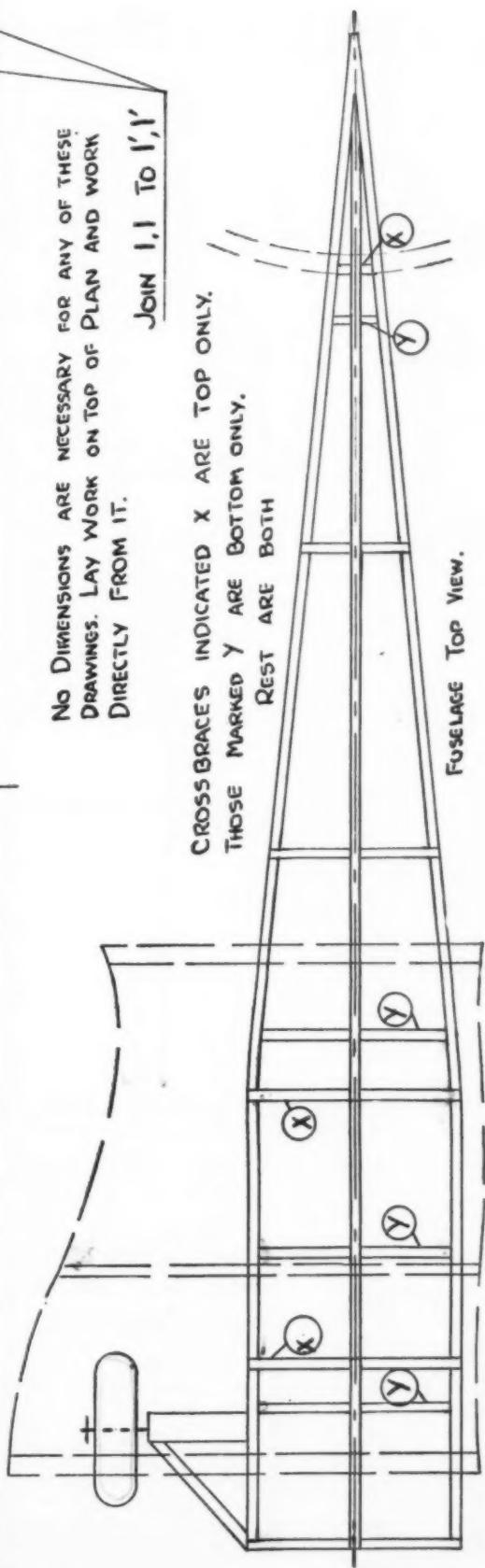




No Dimensions are necessary for any of these drawings. Lay work on top of plan and work directly from it.

JOIN I,I TO I,I'

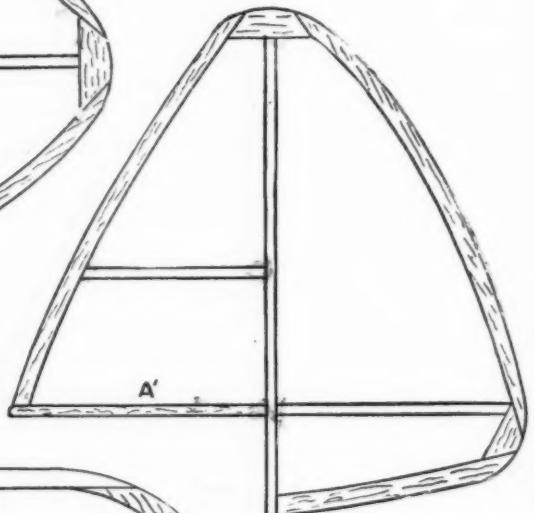
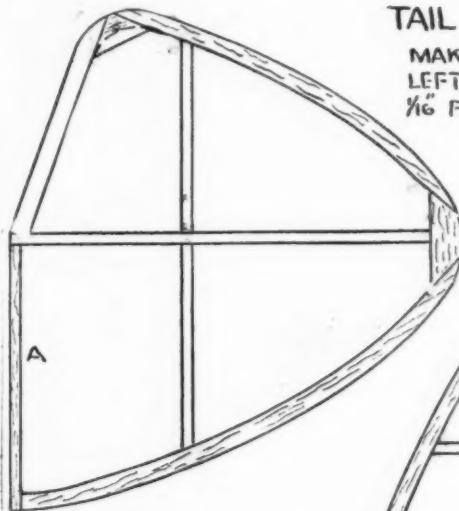
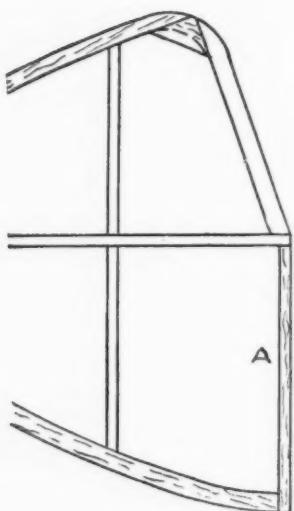
CROSS BRACES INDICATED X ARE TOP ONLY.  
THOSE MARKED Y ARE BOTTOM ONLY.  
REST ARE BOTH



FUSELAGE Top View.

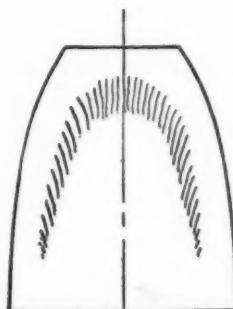
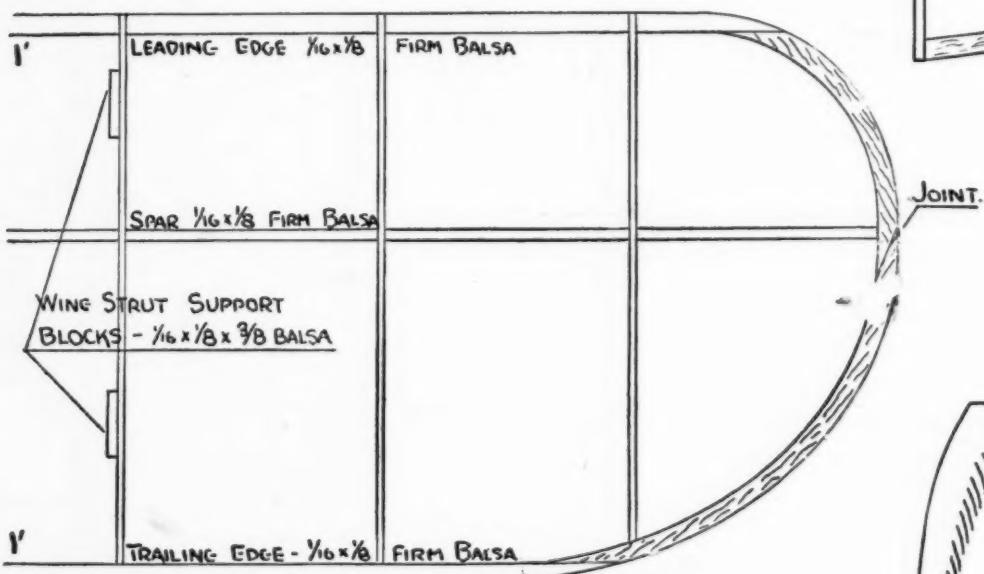
## TAIL SURFACES

MAKE ONE EACH, RIGHT AND LEFT. USE  $\frac{1}{16}$ " SQUARE AND  $\frac{1}{16}$ " FLAT BALSA



MAKE ONE USE  $\frac{1}{16}$ " SQUARE AND FLAT BALSA. TAIL PIECES "A" FIT ON AT "A"

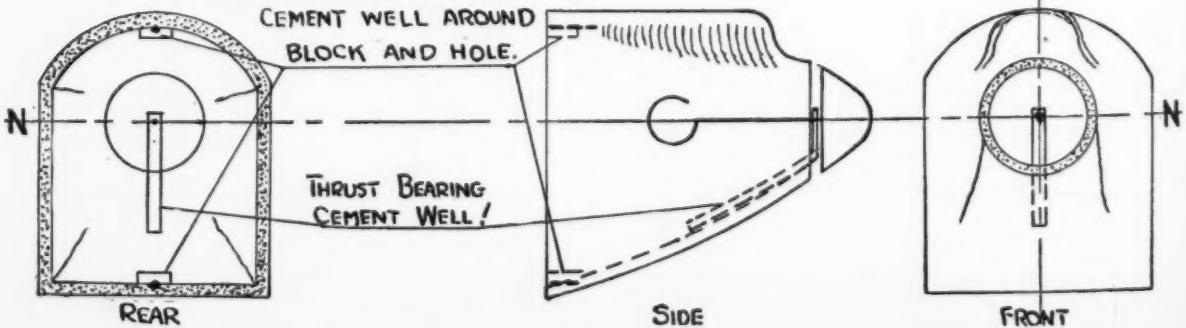
## RUDDER



ONLY THE RIGHT SIDE OF THE WING IS SHOWN  
TO MAKE LEFT HALF - COPY ON TRACING PAPER  
AND REVERSE

## COWL PIN SUPPORT BLOCKS

CEMENT WELL AROUND  
BLOCK AND HOLE.



# The Aerodynamic Design of the Model Plane

MANY readers probably have not read all of the articles on The Aerodynamic Design of the Model Plane, and therefore may not realize the purpose it is supposed to fulfill.

It is a complete course in Model Design, taken from an aerodynamic standpoint. It will cover the design of the model plane in this sense from "A" to "Z". Chapter No. 1 relates to wing design; Chapter No. 2, propellers; Chapter No. 3, stability; Chapter No. 4, motive power; Chapter No. 5, the framework; Chapter No. 6, design of complete model and factors affecting its performance.

It is hoped that this series will serve as a reference work and as a text book for classes in model building, as well as provide the individual with a ready source of information.

Each chapter is so arranged that first, the problem factors are defined; secondly, definite values are given that may be used by the reader who does not wish to delve into the whys and wherefores; thirdly, the theory involved is discussed for those who wish to become more enlightened.

In our discussion last month we started to attack a very important problem. It is one that the model builder, as well as the airplane designer, must thoroughly understand before he can expect to design airplanes that will perform properly. It is the problem of stability. Several methods of gaining lateral stability were discussed that might give satisfactory results in many cases, but the best way to solve this problem is through the correct application of the Dihedral Angle alone, or in conjunction with a low center of gravity or sweep-back.

## Dihedral Angle

The term "Dihedral Angle" as applied to airplanes is descriptive of a particular angular form or shape of wing. If the wing is straight across from tip to tip as shown in Fig. (43), it is known as a straight wing with no dihedral angle. However, if the two halves of the wing slant upward from the center as in Fig. (44), we say it has a positive "Dihedral Angle." If they slant

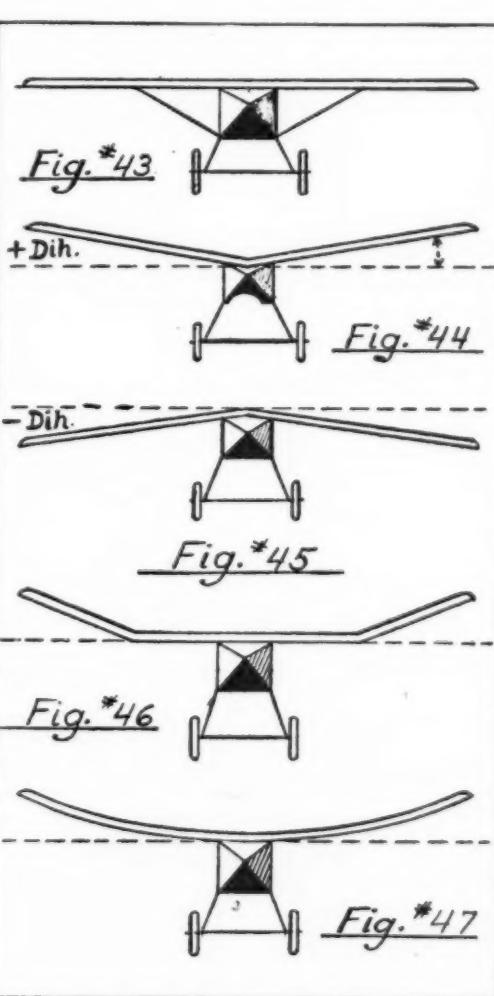
downward, Fig. (45), the Dihedral is negative. This latter form of wing causes instability and is seldom used, except possibly in some "freak" model. In some instances a dihedral

angle is imparted to part of the wing only, Fig. (46); or instead of the two halves of the wing being straight, forming an angle at the center, as in Fig. (44), the wing is curved upward from the center as shown by Fig. (47). The style of positive dihedral used is immaterial as far as the stabilizing effect is concerned. The type and method of construction usually determines the designer's choice in this matter. The less dihedral that can be used and yet obtain the desired amount of stability, the more EFFICIENT the wing will be.

The amount of the Dihedral Angle of a wing is measured by the angle formed between the leading edge of one wing (A) extended through (O) to (E), Fig. (48), and the leading edge of the other wing (B). This angle gives the total dihedral of both wings. Each wing, right and left, will have a dihedral of one-half the total angle. If the total is (10) degrees, we say that each wing has a dihedral angle of (5) degrees. Fig. (49) shows the two halves of the wing forming an angle with a horizontal (AB) passing through the center point (O) of the leading edge. In this case the dihedral angle of each wing is either angle (XOA) or (YOB).

It is impractical to measure this angle by degrees because of the difficulties involved. It is easier and more accurate to measure the dihedral of each wing in terms of the tangent

of the angle, or in other words, in terms of the distance each wing tip is raised, relative to the length of HALF the span. In Fig. (50) the tangent of the dihedral angle (XOA) is  $(\frac{AX}{OA})$ . If (OA) is (16) inches and (AX) equals (2) inches, we say that the dihedral on each wing is—one in eight. A rise of (1) in (64) is practically ONE DEGREE, so we may calculate this angle in degrees if we so desire. (2) inches in (16) is a rise of (8) in (64), so each wing has a dihedral of eight degrees in this case.



### Proper Amount of Dihedral

NOW, how much dihedral angle should we give to the wings of our model to insure proper performance? As might be expected, this varies with difference in the design. The following rules covering the various possible conditions will give you complete satisfaction. These rules only hold true when the center of gravity is high, usually in model planes without a landing gear.

For models in which the wings intersect, the frame or fuselage in the same horizontal plane as the center of gravity (about on a level with the rubber motor), or below the center of gravity, as in the case of mid-wing, and low-wing monoplanes, or "STICK" models, with the motor close to the stick, the DIHEDRAL ANGLE of the wings should be such that each wing tip has an elevation above the leading edge at the center of the wing of ONE INCH FOR EVERY FOOT OF SPAN. This will be equivalent to about (10½) degrees on each wing. For example, if the span is (18) inches, each wing tip should be raised above the level of the mid-point of the wing, just (1½) inches.

It MAY be possible to use less "dihedral," and if you find this is the case for your model, decrease the dihedral the required amount, for the less you can use, the more efficient the wing will be. However, the value of (10½) degrees will prove to be satisfactory in any event, as far as stability is concerned.

FOR BIPLANES this value of one-inch rise per foot of span should be used when the center of gravity (usually center line of rubber motor) is half-way between the upper and lower wings, at their midpoint, Fig. (50), or in cases when it is nearer the upper wing than the lower one. This means the center of gravity is high.

PUSHER monoplanes without a landing gear also come under this classification, as the center of gravity (line of thrust) is practically on a level with the center section of the wings. However, the dihedral of the front and rear wings must have different values of dihedral angle in order not to produce a rocking tendency.

A rule which will give good results is as follows:—On the rear, or large wing, the dihedral should be such that each wing tip is raised above the center section (½) inch for every (12) inches of span.

On the front or small elevating wing the dihedral should be two and one-half to three times as great as the dihedral of the rear wing. This means that each tip of the front wing should be raised (1¼) to (1½) inches for every foot of span. The Grant twin pusher that won the (1931) Mulvihill Trophy was built to these proportions. Its stability, in a wind little short of a gale, (35 M.P.H.), was remarkable.

These RELATIVE VALUES of the dihedral angles on the front and rear wing are correct when the sum of the diameters of the propellers is equal to at least (12) per cent of the sum of the areas of front and rear wings.

If the sum of the propeller diameters is less than this amount, the dihedral on the front wing should be reduced (¼) inch for every (12) inches of span, for every (1) per cent that the diameter sum is less than (12) per cent of the wing area. In other words, if the model is driven by two eight-inch diameter propellers and the total wing area is (200) square inches, then the sum of the diameters is (16) inches or (8) per cent of the wing area. (8) per cent is (4) per cent less than (12) per cent, so the dihedral of the front wing should be (1) inch for every (12) inches of span, less than in the case where the sum of the diameters is (12) per cent of the total wing area.

This would mean that, if the front wing had a span of (12) inches, the dihedral would be such that the wing tips would be raised (2) inches instead of (3) inches. This point is rather important if proper gliding qualities are desired. A model that has too much front wing dihedral for the size of the propellers will spin, or at least be very unsteady on the glide. If your model has a tendency to do this, lessen the dihedral of the front wing.

### Values for Curved Dihedral

THE designer may wish to give the wing of his model a dihedral angle by curving up the wing from the center, Fig. (47), instead of "creasing" the wings at the center, and making them straight from center to tips, Fig. (43). The natural question will be—How much shall the wing tips be raised in this case? This type of dihedral has the same effect as the straight dihedral, and the wing tips should be raised the same amount as in the case of a wing with straight dihedral wings.

For example, if the span of the wing of a tractor model is to be (18) inches, the line of thrust being very close to the center section of the wing, each wing tip should be raised (1½) inches whether a curved or straight dihedral wing is used.

If the line of thrust is (1/30) of the span, or more below the wing center section, each wing tip should be raised (½) INCH for every twelve inches of span in both cases, as has been explained before. This is classified under the heading of a dihedral used in conjunction with a low center of gravity.

### Values for Semi-Dihedral Wing

It is necessary now to consider the wing which is partially of the straight or horizontal wing type and partly dihedraled. The model designer may wish to give a dihedral angle to only part of the wing. The remaining part being a straight wing with no dihedral, Fig. (46) illustrates this type. The question to be answered is—How much it is necessary to raise each wing tip if only part of the wing is slanted upwards, in order that the stabilizing effect shall be the same as if a dihedral angle has been imparted to the entire wing?

As the value for the elevation of the tips varies with the proportion of the wing (Continued on page 34)

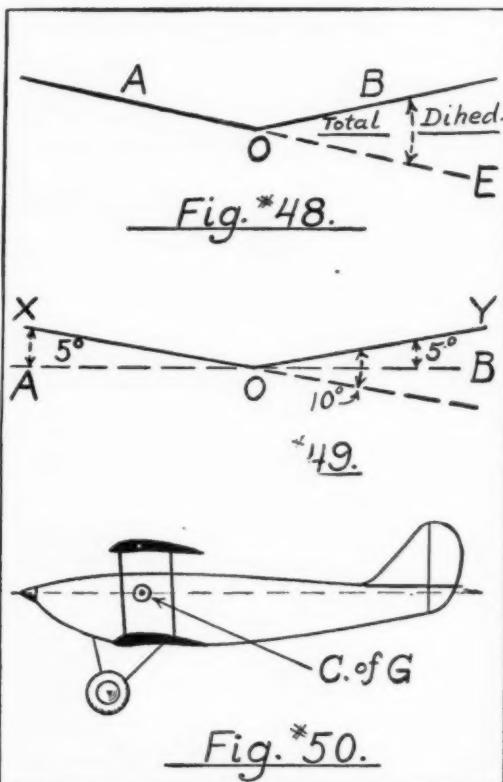


Fig. \*48.

49.

Fig. \*50.

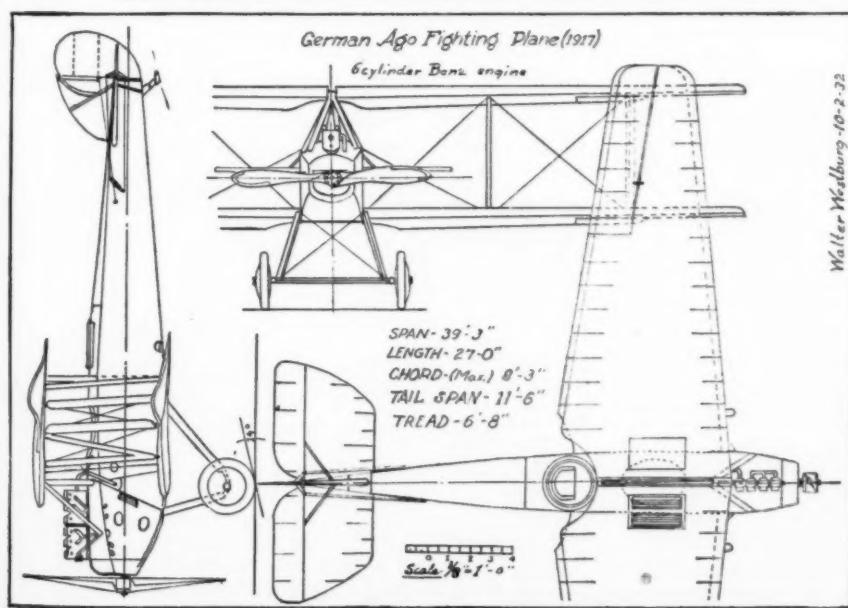
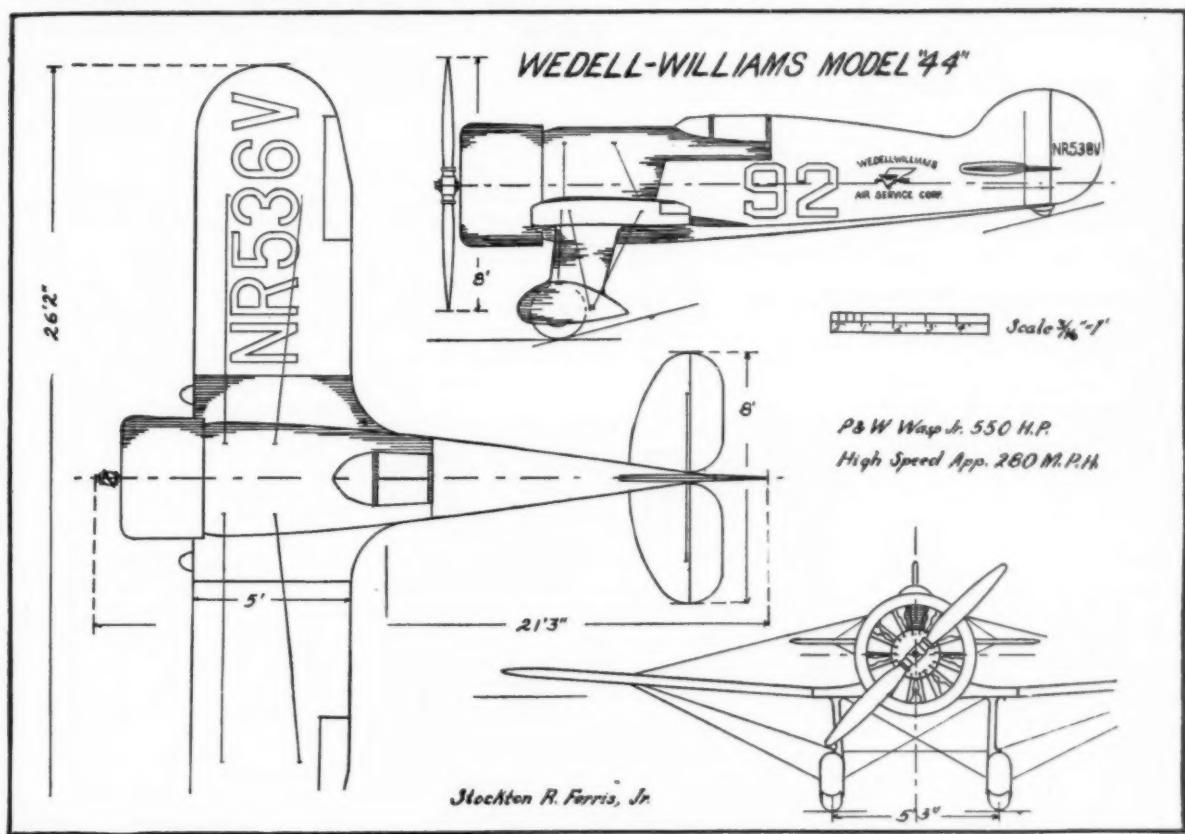
# THE WEDELL-WILLIAMS RACER, MODEL 44

**T**HIS is the ship in which James G. Haizlip established a new transcontinental speed record of 10 hours, 19 minutes, in flying the 2470 miles from Burbank, Calif., to New York City.

The outer panels of the wings have spruce spars and ribs and are covered with plywood and fabric. Haizlip's plane was slightly different from the others

of the same design. The landing gear struts were nearly parallel while the others converged at the top. Also the landing wires on his ship were closer at the fuselage than at the wings, instead of being parallel.

The entire nose of the ship was black (denoted by partial shading), as was the bottom of the fuselage, and the lettering. Note how thin the wing is.



## THE AGO FIGHTER

**T**HIS is a tapered wing German two-seater which appeared on the front in 1917. Not many were in active use, although they gave good accounts of themselves.

They were built by the firm of Aerowerke Gustav Otto, and were designed by the Swiss designer Haefeli, formerly of Farman Brothers, a French concern. These machines resembled the earlier Farman machines in many points of design. A world's record for altitude with six passengers was held by an Ago Biplane, at one time.

# AIR-WAYS

## HERE AND THERE

**Get Busy and "Air Your Ways" of Building and Flying Model Planes. In This Column, Space Will be Devoted to the Activities of Our Readers. Let Others Know What You Are Doing**

**T**HIS month we have some news which will probably cause great excitement and enthusiasm among model builders in the neighborhood of New York City. It has been decided to hold an indoor model meet during the Christmas vacation, in one of the large armories in the city.

We hope to see all of the young fellows who are beginning to fly indoor planes as well as the experts, so tune up the old workshop, the library table or some other spot which may embarrass the family's household operation (most of you who have built models for any length of time, have gone through the experience of being chased from room to room).

The following are the details concerning the meet, which include N.A.A. rules for the three events which will be held.

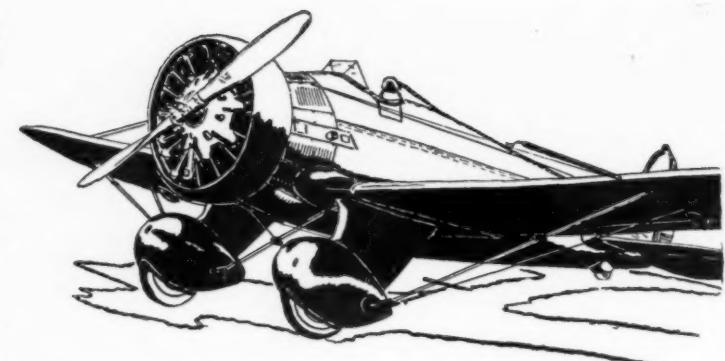
### Eastern States Championship Indoor Contest

Sponsored by

**Picture No. 5,**  
Henry Orzechowsky, second place winner in national Mulvihill contest.



**Picture No. 2,** prizes given at N. Y. City Model Airplane Derby.



**BOEING XP936**

**H. Wood**

A neat drawing by Harland Wood, of Lyndonville, Vt.

**UNIVERSAL MODEL AIRPLANE NEWS.** Open to all model builders whose home state is east of the Mississippi River. The contest will be held in New York City sometime in the week between Christmas Day and New Year's Day. The exact date and location will be announced at least two weeks before the contest.

There are to be three events: Baby R.O.G., Indoor Endurance and Indoor Commercial (or Fuselage).

The contest is to be held under the rules of the National Aeronautical Association and any records which are established, will be certified to the Association.

The rules covering the models eligible for entry in the various events are:

#### *Baby R.O.G.*

Wing area to be no greater than 30 square inches. Distance between propeller thrust-bearing and fixed motor hook to be no longer than 8 inches. Must take off from floor under own power and have landing gear whose wheels have diameter of at least  $\frac{1}{2}$  inch.

#### *Indoor Endurance*

Wing area to be no less than 65 square inches nor greater than 125 square inches. Distance between propeller thrust-bearing and fixed motor hook to be no longer than 15 inches. Models to be hand launched.

#### *Indoor Fuselage*

Wing area to be no less than 65 square inches nor greater than 125 square inches. The fuselage to be built up and covered over at least  $\frac{4}{5}$  of its area. The minimum area of the maximum cross section of the fuselage must conform to the formula  $(\frac{L}{10})^2$  where "L" equals length of fuselage. Model must take off from floor under own power and



**Picture No. 3,** Joseph Battaglia and the detailed scale model Boeing that won the trophy shown.



**Picture No. 4,** Frank Distler, winner of third place in national scale model contest.



Picture No. 7. Mr. Grant discusses a problem with Edward Grannis of Washington, D. C.



Picture No. 6. Vernon Boehle places among the best in the national Mulvihill contest.



Picture No. 8. Steve Fraynor retrieves his plane after a wild ride.

prizes awarded to winners. Joseph Kovel of 404 Bristol Street, Brooklyn, New York, by finishing third in the endurance contest for open stick models, sixth in the closed fuselage model contest and seventh in the glider contest, attained the best average score and was the winner of the New York City 1932 Model Airplane Derby. He was awarded the A. G. Spaulding cup for this unusual performance.

Herbert Greenberg, 205 Keer Ave., Newark, N. J., made a flight of 15' 49" with a single stick tractor model. The plane, when last seen, was travelling northeast over the high buildings near Fifth Avenue and 72nd Street. Unfortunately, the wing tips were not double-surfaced and this excellent flight could not be accepted officially as the rules specified that models must have

have landing gear whose wheels are at least 1 1/4 inches in diameter. Motor to be entirely inside fuselage.

All the models must be rubber-powered and drop no parts in flight.

For complete rules and information, which will be mailed with application blank upon receipt of stamped, self-addressed envelope, write contest committee, UNIVERSAL MODEL AIRPLANE NEWS, 125 West 45th Street, New York, N. Y.

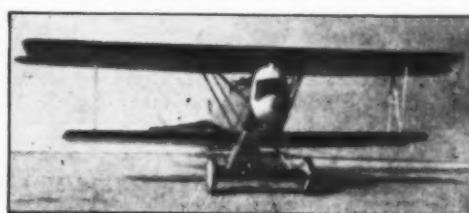
#### New York City Model Plane Derby

MANY will remember with pleasure, the 1932 New York City Model Airplane Derby, which was held recently on the sheep meadows in Central Park, under the auspices of the Bureau of Recreation, Department of Parks, Manhattan. The Honourable Walter H. Herrick, Commissioner of Parks, and Mr. James V. Mulholland, Supervisor of Recreation, were responsible for the organization of this meet. Lieut. Alden was active in co-ordinating all the factors which went to make this meet a big success. Prizes were offered by many companies interested in model airplane activity.

The contest was open to all boys and girls under the age of 21 years. The first 11 places in each of the three events earned prizes. Picture No. 2 shows the group of



Picture No. 9. a Fokker D-VII, which was taken with a home-made pinhole camera. Lawrence McCready made plane and camera.



Picture No. 10. a Spad by McCready. Picture taken with pinhole camera.



Picture No. 12. Frank Cellaura built this model Handley-Page.

double - surfaced construction. A gold medal was awarded Greenberg by the Department of Parks

as a special prize for his meritorious performance.

#### Prizes

THE many prizes given to the winners included one silver trophy, three cups, fifteen gold medals, three silver medals, three bronze medals and eight large planks of Balsa Wood.

Silver cups and trophies were donated by Balsa Wood Company of Brooklyn, Bloomingdale's, Lexington Avenue & 69th Street, New York City; Department of Parks; Scientific Model Airplane Company of Newark, N. J.; Stern Brothers, 42nd Street, New York City.

Gold medals were donated by UNIVERSAL MODEL AIRPLANE NEWS, 125 West 45th Street, New York City and Department of Parks, New York City.

Silver medals and bronze were donated by Department of Parks, New York City.

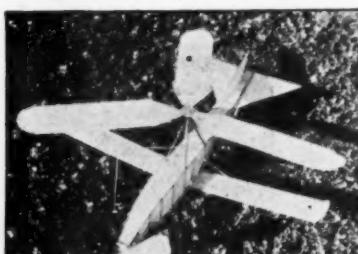
The names of prize winners, and the order in which they finished, are as follows:

#### Endurance Contest for Open Stick Models

Contestant	Time
1. August Ruggieri .....	6' 10"
23 East Third St., N. Y. C.	
2. Frank Celauro .....	5' 9"
169 Bright St., Jersey City, N. J.	



Picture No. 11. a five-foot compressed air model built by Dick Buchanan, right.



Picture No. 14. a model Autogiro built by Jack Clark from plans that appeared in this magazine.



Picture No. 16, a flying Lockheed Sirius, by Howard Earp.



Picture No. 20, Leroy Milliren's Polish Fighter Warms up for a Flight.

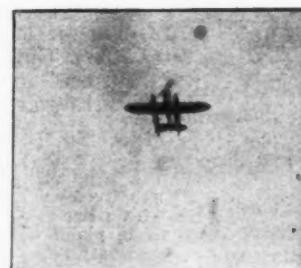


Picture No. 15, Bradford Noble's DeH-4 in flight.

- |                                      |            |
|--------------------------------------|------------|
| 3. Joseph Kovel .....                | 3' 36"     |
| 404 Bristol St., Brooklyn            |            |
| 4. John Zaic .....                   | 3' 24 1/2" |
| 328 East 6th St., N. Y. C.           |            |
| 5. Henry Orzechowsky .....           | 3' 20"     |
| 411 S. 18th Ave., Newark, N. J.      |            |
| 6. Edward Beshar .....               | 3' 17-2/5" |
| 76 Seneca Ave., Tuckahoe, N. Y.      |            |
| 7. Andrew Szymanski .....            | 3' 6 1/2"  |
| 11820 42nd St., Brooklyn             |            |
| 8. Alton H. DuFlon, Jr. ....         | 2' 57"     |
| 561 Prospect Ave., Ridgefield, N. J. |            |
| 9. Thomas Boland .....               | 2' 33-2/5" |
| 918 Hancock St., Brooklyn            |            |
| 10. B. Seltzer .....                 | 2' 30"     |
| 1711 Morris Ave., N. Y. C.           |            |
| 11. Frank Zaic .....                 | 2' 29"     |
| 328 East 6th St., N. Y. C.           |            |

#### Closed Fuselage "Commercial Type" Contest

Contestant	Time
1. Mitchell S. Roberts .....	3' 5"
438 E. 98th St., Brooklyn	
2. John Young .....	2' 40"
241 E. 49th St., N. Y. C.	
3. Henry Orzechowsky .....	2' 26"
411 S. 18th Ave., Newark	
4. John Zaic .....	1' 50"
328 E. 6th St., N. Y. C.	
5. Rubin Schuman .....	1' 43-1/5"
367 Watkins St., Brooklyn	
6. Joseph Kovel .....	1' 34-3/5"
404 Bristol St., Brooklyn	
7. Henry Kessler .....	1' 33"
Address not known.	
8. Alton H. DuFlon, Jr. ....	1' 31"
561 Prospect Ave., Ridgefield, N. J.	
9. Edward Beshar .....	1' 20"
76 Seneca Ave., Tuckahoe, N. Y.	
10. Seymour Henig .....	1' 6"
Address not known.	
11. Walter Kuhling .....	1' 2-2/5"
157 E. 127th St., N. Y. C.	



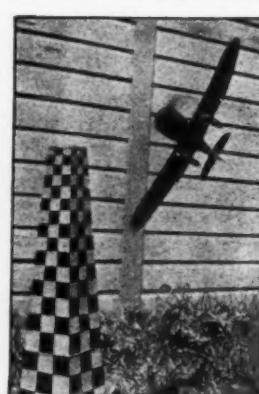
Picture No. 17, a fine flying model Supermarine by Jack Sheppard, Jr.



Picture No. 18, Gaylord Specht's flying scale Nieuport.



Picture No. 19, Tom Pratt, Jr., built this Hawker Fury in 35 hours.



Picture No. 21, Frank Neheg's model Mystery Ship rounds a model pylon.



Picture No. 22, Scale Vought Corsair by Nelson Black, national third place winner in 1931.

#### Glider Contest

Contestant	Time
1. John S. Romanowski .....	29-2/5"
205 Railroad Ave., Jersey City.	
2. Matthew Romberg .....	28-3/5"
515 W. 177th St., N. Y. C.	
3. Sol Roskin .....	24"
298 Bushwick Ave., Brooklyn	
4. Stanley Congdon .....	23 1/2"
Newark, N. J.	
5. Alton H. DuFlon, Jr. ....	23"
561 Prospect Ave., Ridgefield, N. J.	
6. John Fazio .....	22-3/5"
Boerum St., Brooklyn	
7. Joseph Kovel .....	22"
404 Bristol St., Brooklyn.	
8. John Young .....	21-1/5"
241 E. 49th St., N. Y. C.	
9. John Zaic .....	20-1/5"
328 E. 6th St., N. Y. C.	
10. Emanuel Radoff .....	18-2/5"
535 S. 16th St., N. Y. C.	
11. Michael Surma .....	16"
Newark, N. J.	

PROBABLY many of our model builders have not forgotten the Atlantic City meet and the interesting time that was had by all present. Here we have a few pictures of winners of the meet that were not obtainable for previous issues. Picture No. 3 shows Joseph Battaglia and the Boeing Scout with which he won second place in the scale model contest and for which he was awarded a beautiful trophy, which is also shown in this picture. Battaglia is an ardent model builder and will be glad to hear from any enthusiastic readers. He lives at 925 Third Avenue, N.Y.C.

Picture No. 4 shows Frank Distler of



A Fokker D-8, making a beautiful flight of four hundred feet. It was built by Joe Nieto of San Antonio, Texas.



Picture No. 24, the famous Boeing Bomber snapped at the Cleveland Air Races.

130 Tremont Avenue, Fort Thomas, Ky., who won third place with the little model Aeronca which he is holding. A picture of this little machine was published on page 15 of the September issue of UNIVERSAL MODEL AIRPLANE NEWS. Distler will be glad to furnish the plans of this Aeronca to readers, as well as plans of a neat Lockheed Air Express which he has recently finished.

Mr. Jerome Kittel and Bob Clary



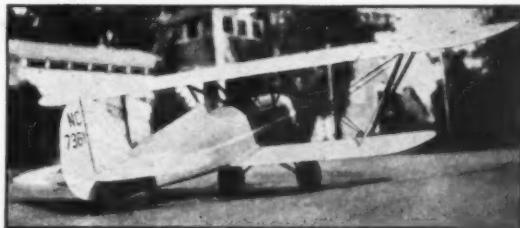
Picture No. 25, the Gee-Bee low-wing trophy racer.

ture No. 6 with his well constructed twin pusher. His address is R.R.1, Box 188.

In Picture No. 7, we see Edward Grannis of 1615 Kennedy Street N.W., Washington, D.C., patiently listening to a discourse on model design by our editor, Charlie Grant. Grannis placed well up among the leaders in the Mulvihill contest, with a flight of 1' 11-2/5". A gusty wind was a great handicap and reduced



Picture No. 26, Ben Howard's "Ike" at Cleve-land. (left)



Picture No. 23, a model "Bird" by John Malloy. (right)

have been kind enough to supply us with a few more pictures of interesting figures at the National meet held at Atlantic City. Here they are. Picture No. 5 shows Henry Orzechowski of 411 South 18th Ave., Newark, N.J., with his twin pusher which won second place in the Mulvihill contest. Orzechowsky is a prominent figure in all model contests.

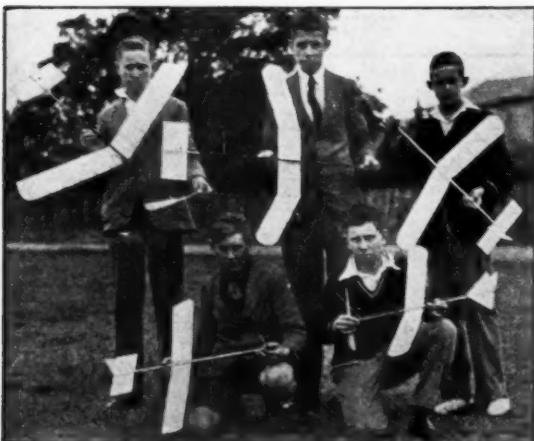
Vernon Boehle of Indianapolis, Indiana, is shown in Pic-



Picture No. 27, the new 300 m.p.h. Gee-Bee Gull Wing.

the flying time of many worthy builders.

Picture No. 8 shows the most dramatic factor in the National meet; one of the motorcycles and sidecars which chased the fleeing model planes all over Atlantic City. The picture shows Steve Fraynor of 66 Congress Street, Newark, N.J., in the act of climbing out of the side car used to retrieve his plane. Mr. Irvin Polk who organized (Continued on page 45)

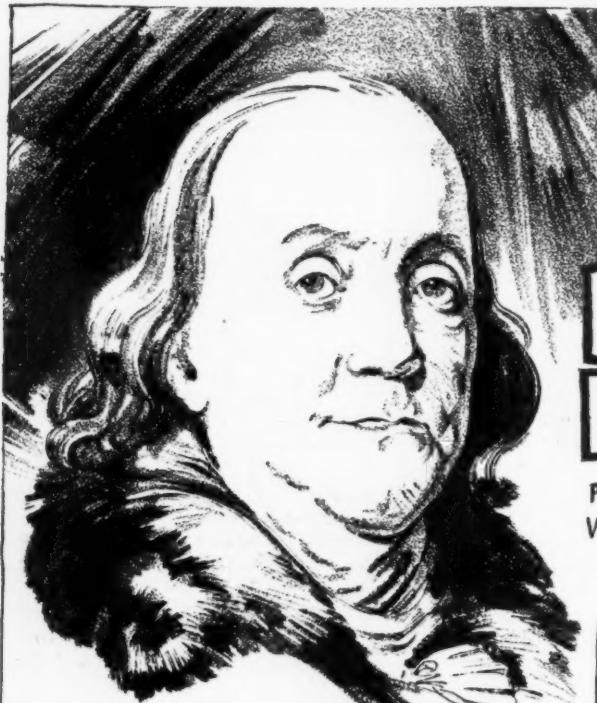


Picture No. 28, these Australian "Squirrels" chase "Aero-nuts." 45 "Min-nuts" is their record. (left)

Picture No. 29, Stan Baker with his giant "Winnie Mae." (right)

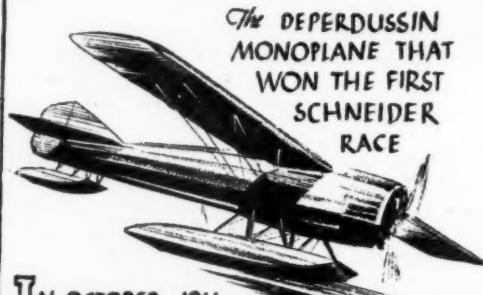


# STRANGE FACTS OF AVIATION



## Benjamin Franklin

PREDICTED THAT AIRCRAFT  
WOULD "CONVINCE SOVEREIGNS  
OF THE FOLLY OF WAR"\*



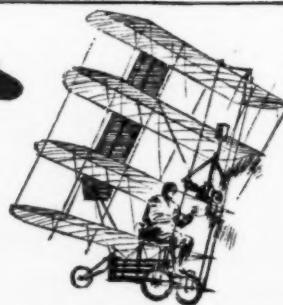
IN OCTOBER, 1911,  
GLEN CURTISS MADE A FLIGHT  
OFF WATER, THE FIRST TIME AN AIRCRAFT  
HAD BEEN FLOWN ON FLOATS. THE FIRST RACE  
OF THE FAMOUS SCHNEIDER TROPHY CONTEST  
WAS FLOWN ONLY 18 MONTHS LATER.



Lt. Wm. A. Cocke, Jr.  
PRESENT SOARING  
RECORD HOLDER

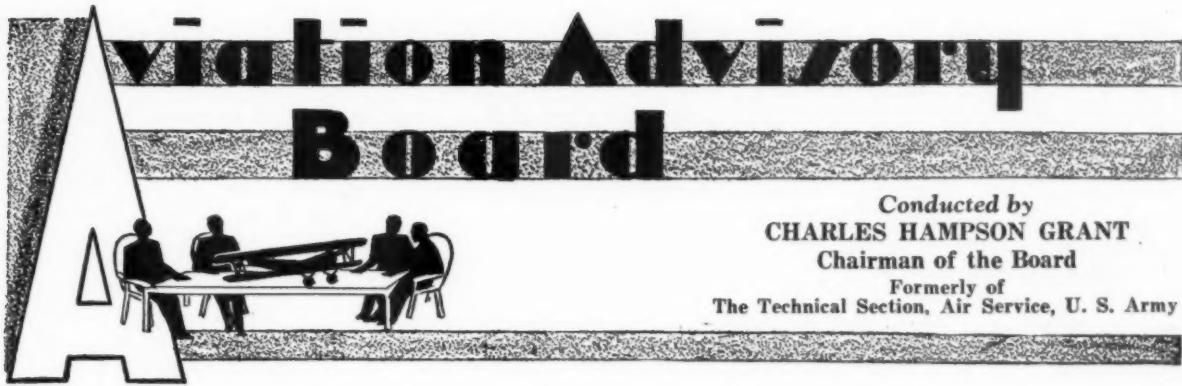
FROM THEIR 2 MIN. 22 SEC.  
RECORD IN 1920, THE  
GERMANS RAISED THE  
WORLD SOARING RECORD  
TO 14 HR. 43 MIN. IN 1929.

THIS COUNTRY, IN THE LAST THREE  
YEARS, HAS RAISED THE RECORD  
TO 21 HR. 34 MIN. 15 SEC. OR AN  
INCREASE OF 50 PERCENT!



MATTHEW SELLERS FLEW WITH 5 HORSE-POWER

# Aeronautic Advisory Board



Conducted by  
CHARLES HAMPSON GRANT

Chairman of the Board

Formerly of  
The Technical Section, Air Service, U. S. Army

**I**T IS with great pleasure that I notice a large increase in the number of questions on the design of model planes, in the mail which has come into the office recently from our readers. After all is said and done, it is more difficult to find the correct answers to questions of a technical nature than it is to questions such as "Who was Germany's greatest ace?" or "How fast can the new Boeing Pursuit plane fly?" Answers to the latter questions may be ascertained through research at a library.

**H**ERE we have a question from Orin Woods of 52 Summer Street, Everett, Mass.

**Question.** I have a high wing model of 38", wing span 30" long, with a chord of 5½" and have powered it with a rubber motor-driven 11" propeller. This propeller will fly it but the machine will not take off the ground or fly any distance. Do you think I have a large enough propeller?

**Answer.** Wood has determined the cause of his trouble as evidenced from the last question asked. Unquestionably the propeller is too small for the amount of wing area that is being used. The cure is either to enlarge the propeller, for example to 15", or to decrease the wing area. The propeller blade area should be approximately 1/10 the wing area.

Steve Markovich, Jr., of 5235 S. California Avenue, Chicago, Illinois, wishes to know the answers to the following questions:

**Question.** What is a radial engine?

**Answer.** A radial motor is a motor, the chief characteristic of which is that the cylinders radiate out from the crankcase as the spokes of a wheel radiate out from the hub.

**Question.** What is meant "to pancake"?

**Answer.** A machine is said to pancake when it has lost its flying speed and drops in a manner resembling a para-

chute. When a machine pancakes, the angle of attack of the air on the wings is greater than 15 degrees, which is the angle at which the wing gives the greatest amount of lift. With a greater angle of attack than about 15 degrees, the lift diminishes considerably.

**Question.** What is gap?

**Answer.** Gap is the vertical distance from the horizontal plane of the leading edge of a wing to the horizontal plane of the leading edge of an adjacent wing, when the machine is in the line of flight.

**Question.** What is decalage?

**Answer.** Decalage is an arrangement of airfoil surfaces in a biplane combination which exists when the upper airfoil is set at an angle of incidence greater than that of the lower airfoil.

**Question.** What is a tandem engine mounting?

**Answer.** A tandem engine mounting is a mounting which embodies two engines, one set directly behind the other.

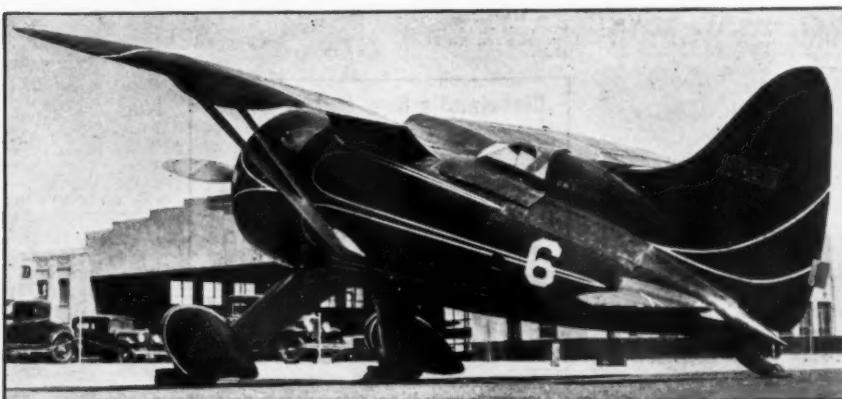
**Question.** What is a ground loop?

**Answer.** A ground loop is a maneuver performed by an airplane when taxiing or when rolling along the ground when taking off or landing, in which the pilot loses directional control of the machine. Usually the machine is moving in a certain direction parallel to the longitudinal axis, the tail swings sideways, which causes a succession of gyrations more becoming to a clown in the circus than to an airplane. The result generally is kindling wood or twisted metal.

**Question.** What is a wing overhang?

**Answer.** A wing overhang is a type of design which applies to biplanes when the upper wing is of greater span than the lower. The overhang is that portion of the upper wing which extends out beyond the tip of the lower wing.

(Continued on page 40)

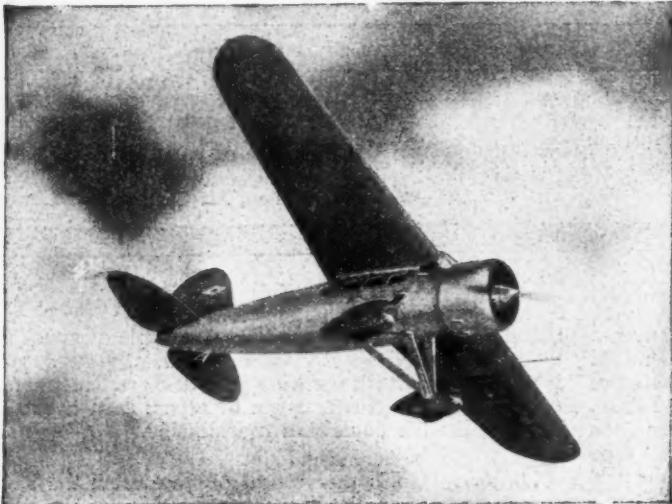


Keystone-Underwood

A new type Gee-Bee, high-wing monoplane, built for the Thompson Trophy Race held at Cleveland. This ship bored through the air at nearly 300 miles per hour in tests held before the race.

This machine is of particular interest as it is a departure from the usual low-wing Gee-Bee designs. It is pleasing to note the large vertical tail surfaces which should decrease any possible spinning tendency.

# Make Up Your Christmas List NOW from this



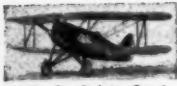
Here's the entire Cleveland-Designed Line—including most every possible type of land and sea plane. Every model aircraft builder is making plans now for the Cleveland-Designed Models he wants for Christmas. Make up your list from this magnificent array. Study every model carefully. Decide on the ones you want. Prices this Christmas are lower



## LOCK-HEED VEGA

An instantaneous hit the first time it was displayed—for its remarkable realism. Compliments galore have come in—not only for its startling beauty and sleekness of line, but its swift, graceful flight as well. This model follows no particular Vega, but the rich, striking color scheme is that of Amelia Earhart's red and gold monoplane in which she recently flew the Atlantic. Be sure this is on your list. Span 20"; length 21"; weight 2.7 oz. Colored brilliant red wings, tall surface and wheel shoes; everything else gold except black details, for which ink may be used. Kit is complete—as are all "Cee-Dee" kits—and even includes the New Enamel Dopes and printed and numbered balsa. Complete Kit SF-24, only \$2.95.

### Authentic 3/4-in. Scale—Known and Flown in 32 Different Countries



**1930 G. Lakes Sport Trainer**  
Span 20"; length 15½"; weight 1.2 oz. Colored international orange and black. Kit SF-1, \$2.50.



**1931 Polish P. 6 Fighter**  
Span 25¾"; length 17½"; weight 2.5 oz. Colored all silver. Kit SF-6, \$2.95.



**1917 Sopwith Camel**  
Span 20¾"; length 14¾"; weight 1.8 oz. Colored orange and green. Kit SF-10, \$2.50.



**1917 Richthofen's Triplane**  
Span 17¾"; length 13¾"; weight 1.8 oz. Colored all red. Kit SF-14, \$2.50.



**1920 Mystery Ship**  
Span 22"; length 15¾"; weight 2.2 oz. Colored red and blue. Kit SF-2, \$2.95.



**FEATURES**

1. Models are of the built-up all-balsa, Jap tissue construction, rubber strand motorized, and flown by efficient, easy-to-assemble C-D propellers.
2. The kits are complete even to colored dopes, except detail black; when very little is needed, black ink is recommended.
3. All necessary machine work completed, only hand-work left to be done.
4. Kits include full-size drawing with note instructions right on them. Simply trace or cut out patterns, mark on the balsa wood, cut them out and assemble model right on the drawing, except SF-22, 23, 24 and 25.
5. Many types of construction employed—you learn much building C-D models. Details are all worked out, not left to your imagination.

Kits SF-22, 23, 24 and 25 contain balsa already printed out and numbered. Not a few pieces rubber-stamped—but ALL the irregular shapes are printed out. Merely cut out numbered parts and assemble right on drawing. They're Great. Nothing else like 'em!



**1918 Fokker D-7**  
Span 21"; length 17"; weight 1.8 oz. Colored green and orange. Kit SF-15, \$2.95.



**1918 DH-4 Battleplane**  
Span 31¾"; length 22¼"; weight 3.9 oz. Colored yellow and olive drab. Kit SF-3, \$3.50.



contain balsa already printed out and numbered. Not a few pieces rubber-stamped—but ALL the irregular shapes are printed out. Merely cut out numbered parts and assemble right on drawing. They're Great. Nothing else like 'em!



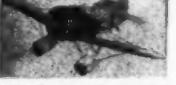
**1917 Albatross D-3**  
Span 22"; length 17¾"; weight 1.9 oz. Colored orange and blue. Kit SF-16, \$2.50.



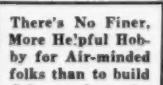
**1916 Curtiss JN-4D**  
Span 22¾"; length 20¾"; weight 2.7 oz. Colored yellow, details black. Kit SF-4, \$2.95.



**1931 Curtiss Helldiver**  
Span 23¾"; length 16¾"; weight 2.7 oz. Colored blue and silver. Kit SF-7, \$3.50.



**1917 Experimental Quad**  
Span 20¾"; length 18¾"; weight 2.3 oz. Colored red, white and blue. Kit SF-11, \$2.50.



**There's No Finer, More Helpful Hobby for Air-minded folks than to build Cleveland and -Designed Models**



**1931 Boeing P-12C**  
Span 22¾"; length 14"; weight 2.0 oz. Colored green and yellow. Kit SF-8, \$2.95.



**1916 Col. Bishop's Scout**  
Span 19¾"; length 17"; weight 1.8 oz. Colored silver and blue. Kit SF-12, \$2.50.



**1931 Doolittle's Laird S.S.**  
Span 15¾"; length 13¾"; weight 1.7 oz. Colored yellow and green. Kit SF-5, \$2.50.



**1917 SE-5**  
Span 20"; length 15¾"; weight 1.9 oz. Colored natural or ivory. Kit SF-9, \$2.50.



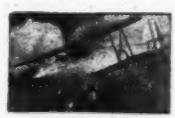
**1917 Rickenbacker's Spad**  
Span 19¾"; length 15¾"; weight 2.0 oz. Colored yellow and green. Kit SF-13, \$2.50.

## Guarantees

1. Everything is as advertised or money refunded. For other reasons a 50¢ charge is made for returning kits; west of the Mississippi, 75¢.
2. A-1 quality. Defective parts replaced free of charge—advise us before returning.
3. Kits are priced low for their value, and shipped *post-free* everywhere.
4. Immediate, personal attention given to all orders. Insurance, 5¢ per kit extra.
5. When colored, finished models look far better than photographs shown here. But please remember, these are kits of materials, not knock-down sets or complete planes, for we sell no finished models.



**1930 Howard Racer**  
Span 15"; length 13¾"; weight 1.5 oz. Colored all white. Kit SF-18, \$1.00.



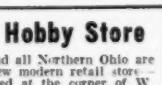
**1930 Hawker Fury**  
Span 22¾"; length 19¾"; weight 2.6 oz. Colored all silver. Kit SF-20, \$2.50.



**1931 Supermarine SE-B**  
Span 22"; length over all 21"; weight 2.9 oz. Colored silver and blue. Kit SF-19, \$2.50.



**1932 Curtiss Hawk P-6E**  
Span 23¾"; length 16¾"; weight 2.3 oz. Colored yellow and green. Kit SF-21, \$2.50.



**1932 Curtiss F6C-2**  
Known as the "Flicker". Span 19¾"; length 13¾"; weight 2.2 oz. Silver and blue. Kit SF-22, \$1.05.



**1932 Boeing P-26**  
Formerly XP-936. Span 21¾"; length 17¾"; weight 2.5 oz. Yellow and olive drab. Kit SF-23, \$1.95.

# CLEVELAND MODEL & SUPPLY

# Great "Cee-Dee" Line of 45 Flying Model Kits

than ever. Don't wait till the last minute. Go to your dealer's early—if he hasn't the kits you want in stock—tell him to order them for you. Accept no substitute—for the "just as good" models are never as good as the original Cleveland-Designed authentic, all-flying models. Order early—and be good to yourself.



## CURTISS A-8 ATTACK PLANE

A model packed with thrills in building, and thrills in flying. Amazing in the details it embodies—stern instrument boards, exceptional flying flash, maneuverability, and accoutrements as America's new "terror of the sky" is, experienced airmen are really astonished at the masterly way so much of this realism has been engineered into this authentic Cleveland-Designed model. It's detailed to the last feature—tailplane, rudder, windows, gas tank, wing flaps, dummy motor incidents, venturi, slot, etc., etc. ALL balsa wood is printed out and numbered. This Kit, as all Cleveland-Designed Kits, contains everything needed (excepting touch-up black, for which purpose ink or black dope may be used). Also includes the new Cleveland Enamel Dopes, which give it that remarkable appearance everyone is talking about. Authentic  $\frac{3}{8}$ " scale. Span 33"; length 24"; weight 4.1 oz. Colored Army yellow and olive drab. Complete, Kit SF-25, only \$2.50.



### Authentic $\frac{3}{8}$ -in. Scale



**1932 Boeing Bomber**  
Span 29"; length 19 $\frac{1}{2}$ "; weight 2.1 oz. Colored yellow and green. Kit JSF-1005, \$2.50.

### Check and Double Check

All pictures on these 2 pages are of actual "Cee-Dee" Models. We never use photos of the real ships—occasionally we use backgrounds for realism. Every "Cee-Dee" Model is a flying model—years ahead! All "Cee-Dee" Kits are complete (c-o-m-p-l-e-t-e). They represent a value far beyond their low price.

### Beginners $\frac{3}{8}$ -in. Scale Models



**1930 Great Lakes Trainer**  
Span 13 $\frac{1}{2}$ " and 18 $\frac{1}{2}$ ". Colors red, white and blue. Kit FL-101, 85¢.



**1932 Fleetster Monoplane**  
Span 16 $\frac{1}{2}$ ". Colored all green. Kit FL-103, 85¢.



**1932 Boeing Fighter**  
Span 11 $\frac{1}{2}$ ". Colored silver, white and blue. Kit FL-104, 85¢.



**1920 Eaglereck Bullet**  
Span 14 $\frac{1}{2}$ ". Colored blue and red. Kit FL-105, 85¢.



**1930 Curtiss Hawk**  
Span 11 $\frac{1}{2}$ ". Colored yellow and green. Kit FL-106, 85¢.



**1929 Mystery Ship**  
Span 10 $\frac{1}{2}$ ". Colored red and black. Kit FL-107, 85¢.



**1932 Boeing Mail Plane**  
Span 16 $\frac{1}{2}$ ". Colored silver, white and blue. Kit FL-108, 85¢.



**1929 Curtiss Robin**  
Span 15 $\frac{1}{2}$ ". Colored yellow and orange. Kit FL-109, 85¢.



**1932 Vought Corsair**  
Span 13 $\frac{1}{2}$ ". Colored silver, white and blue. Kit FL-110, 85¢.



**1931 Lockheed Sirius**  
Span 16 $\frac{1}{2}$ ". Colored orange and black. Kit FL-111, 85¢.

### Large Outdoor Profile Fuselage Models



**Cleveland Robin**  
Span 33"; length 20". Colored yellow and red. Kit FL-201, \$1.85.



**Cleveland Sirius**  
Span 34 $\frac{1}{2}$ "; length 23". Colored red and black. Kit FL-202, \$1.95.



**Cleveland Bull-Pup**  
Span 36"; length 24". Colored green and yellow. Kit FL-203, \$1.85.

### $\frac{3}{8}$ -in. Scale Semi-Profile Fuselage Models



**Cleveland Amphibian**  
Span 27"; length 16 $\frac{1}{2}$ "; weight 1.2 oz. Colored yellow, low and blue. Kit FL-301, \$2.50.



**Cleveland Trimotor**  
Span 29"; length 18 $\frac{1}{2}$ "; weight 1.1 oz. Colored silver and blue. Kit FL-302, \$2.50.



**Cleveland Pirate Bomber**  
Span 37 $\frac{1}{2}$ "; length 23 $\frac{1}{2}$ "; weight 2.1 oz. Colored yellow and green. Kit FL-303, \$2.50.



**Cleveland Commodore Flying Boat**  
Span 37 $\frac{1}{2}$ "; length 23 $\frac{1}{2}$ "; weight 2.1 oz. Colored yellow and green. Kit FL-304, \$2.50.

### WARNING!

Cheaper Kits now on the market are not safe when only half enough material is supplied, accompanying a semi-finished inaccurate and unauthentic drawing.

### Special Surprise! Don't Miss It!

If you have already sent for the latest CME Technical Bulletin for Cleveland Model Engineers, this special surprise will come to you without further writing. But if you haven't yet sent for the Bulletin with its complete news, details and clear pictures of the entire "Cee-Dee" Line of Flying Model Aircraft Kits, and reasonably-priced A-1 quality supplies, do it at once. Be sure to enclose 25¢ to defray mailing expense, together with your name and address. Don't delay. Send AT ONCE.

**CLEVELAND MODEL & SUPPLY CO.,**  
1866-N12 West 57th St., Cleveland, Ohio

Please rush the following order, for which I am enclosing \$.....

Kit No. .... @ ..... Kit No. ....

Kit No. .... @ ..... CME Bulletin.....\$

Kit No. .... @ ..... Insurance .....

Print Name.....

Address .....

City and State .....

Age ..... yrs; Model Experience ..... yrs.

My Store Dealer's Name .....

City .....

I am pinning to this coupon a list of models I would like to see Cleveland-Designed (Note: Advise us every 3 months.)

If he hasn't them, he'll be glad to get them for you. Ask him to do this for you and your friends who want to purchase authentic "Cee-Dee" Flying Model Aircraft Kits right there in your town. If ordering direct remember Special Delivery Mail Service is 15¢ extra per kit. Two or more Kits, 25¢ extra. Kits SF-3, 24, and 25 require 25¢ each extra. (Foreign Customers: On all orders, send 15 per cent extra, except to countries where transit charge applies, then send 30 per cent extra. Ask your postmaster. Customs must be paid by purchaser upon arrival.)

**COMPANY, Inc.** 1866-N12 W. 57th St., Cleveland, O.

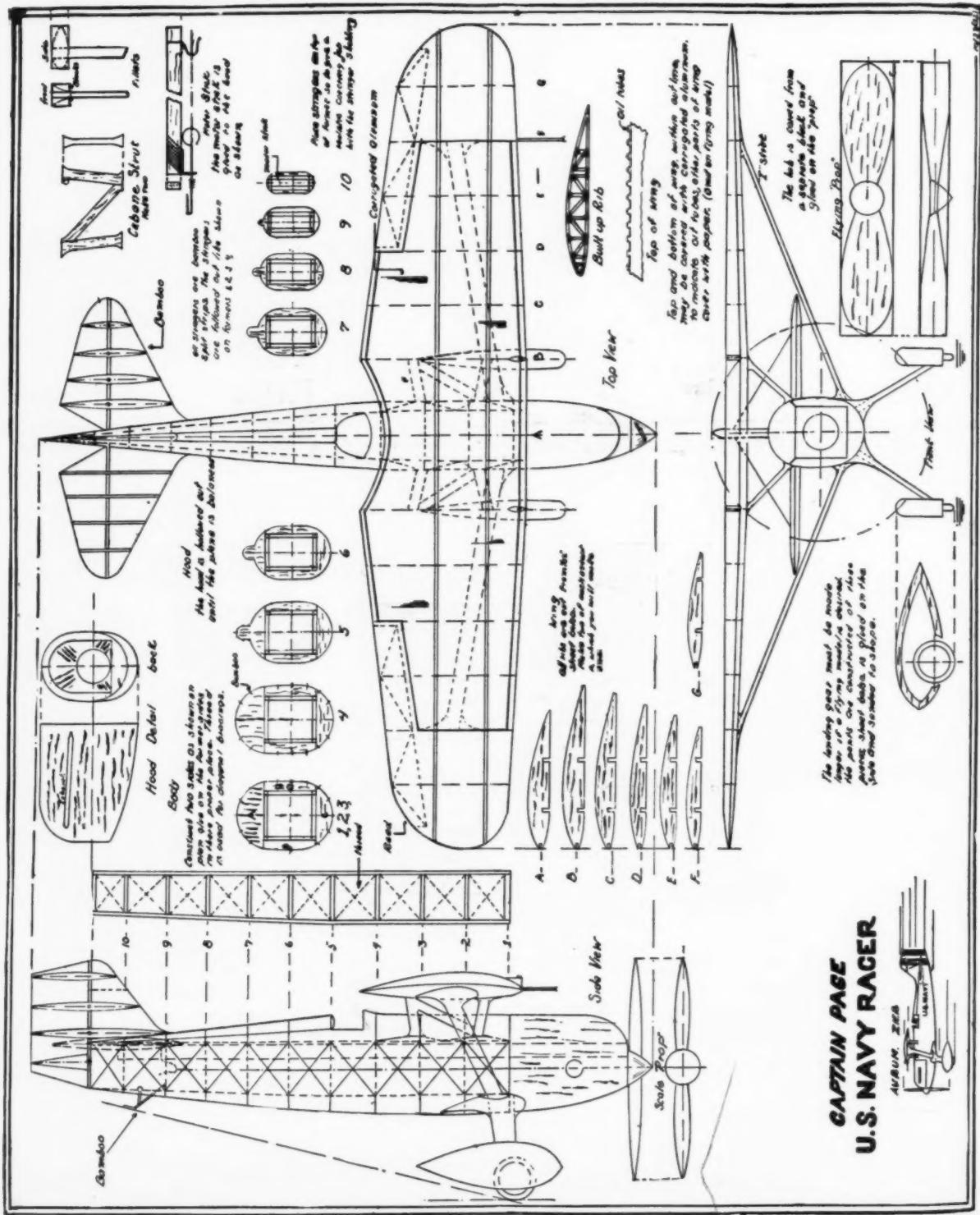
Model Engineers Since 1919

# CAPT. PAGE U. S. NAVY RACER

**T**HE United States Navy Racer, XF6C-6, piloted by the late Captain Arthur H. Page, was rebuilt from a five-year-old Curtiss-Hawk and entered in the 1930 National Air Races at Chicago. On its final test August 19th, 1930, the Mystery XF6C-6 roared over Roosevelt field at an amazing speed of more than 300 miles an hour. The once king of the air was powered

with a Curtiss Conquerer supercharged, chemically cooled engine developing 600 horse power.

The span of the wing is  $31\frac{1}{2}$  feet, part of the upper and lower surface of which composes water and oil radiators. The "I" strut is a single spar built up with thick sections and covered with aluminum. The stabilizer is controlled by wires and may be adjusted in flight.



# BIDDING TO CONQUER THE STRATOSPHERE

**T**HINK of it! Ten miles up in the air, where there is hardly any air at all, where there will be no air-bumps because the storms never get up that high. Here the wonder-plane will speed through a blaze of perpetual sunlight at a speed far beyond the reach of the fastest pursuit planes in existence. "Well, what of it?"

Unknown to most of them, a French inventor has been long at work on the answer to that question. That answer is now ready in the form of one of the world's most remarkable airplanes. She will take the air for the first time in a few weeks, with Massotte, the French flyer who already holds two world's records, at the wheel. Her first flight will be an attempt to bring down all existing altitude records, including even that of Piccard. Her second will be a hop from Paris to New York; and with any kind of luck, Pilot Massotte counts on covering the distance in less than fourteen hours, thus inaugurating the long-awaited daily transatlantic plane service.

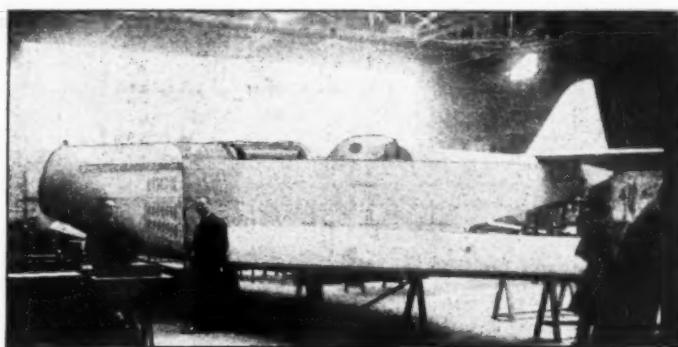
I talked with Louis Guerchais, the inventor, about it, in his little factory on the heights of St. Cloud, just outside Paris. Louis Guerchais pulled at the stick of a bomber amid the German shrapnel bursts over the trenches of Verdun during the war, and it was this experience that gave him the idea of his great invention. "Why not," he argued, "a bomber that will fly so high that no pursuit plane can reach it? After all the pursuit pilot always has to handle machine guns, and that means he can't be shut in an air-tight cabin. But a bombing pilot can release his bombs by remote control, so he can be in an air-tight cabin, and can go up where a pursuit pilot can't make the climb." And that idea was the beginning of the Guerchais stratosphere plane—stratosphere, because it will climb above the atmosphere.

"What's the secret of being able to make such heights?" I asked Louis Guerchais.

"It's all in the propeller," he replied. "The propeller has a variable pitch. The reason the ordinary airplane has a ceiling is because above a certain height the air gets so

## Interesting Features of a French Plane That will Attempt to Penetrate the Upper Air

By Fletcher Pratt



Studio Phebus Paris  
The French Stratosphere Plane. This ship has a sheet duralumin cabin and air purifying equipment.



Studio Phebus Paris  
Louis Guerchais, World War pilot and inventor of the French Stratosphere Plane.

thin that the propeller won't bite off enough of it to give any traction. If you make a propeller that works at extreme altitudes, it bites off too much air near the ground. But in the stratosphere plane, the pilot can change the pitch of the propeller at will. He can go up to any height where his wings will sustain him."

"And how high is that?"

"Frankly, I don't know. No one has ever been up there except Piccard and his experiments aren't conclusive. From calculations we make here on the ground, the stratosphere plane will make a minimum altitude of 55,000 feet. We're hoping for 60,000 and we may get more."

To fly at these heights the stratosphere plane has been provided with extraordinarily large wings, and with proportionately large tail surfaces, for in the thin atmosphere of ten miles above the earth she will be difficult enough to control in any case. She is a one-seater, all the carrying capacity being devoted to tanks for the enormous Lorraine-Dietrich 700 H.P. motor, fitted with a supercharger, and to special arrangements to make life possible for the pilot at an altitude of ten miles above the earth.

ONCE inside his cabin, the pilot might as well be on another planet. The cabin itself is nothing but an enormous tank, like a fuel tank, slung in the middle of the fuselage. The pilot will enter through a diminutive manhole at the top, just big enough for a slim man to squeeze through. Once inside, he will bolt the manhole behind him in exactly the same way the crew of a submarine shuts the conning tower for a plunge. And in fact, that is what the pilot is going to do; take an upside-down plunge into the upper air.

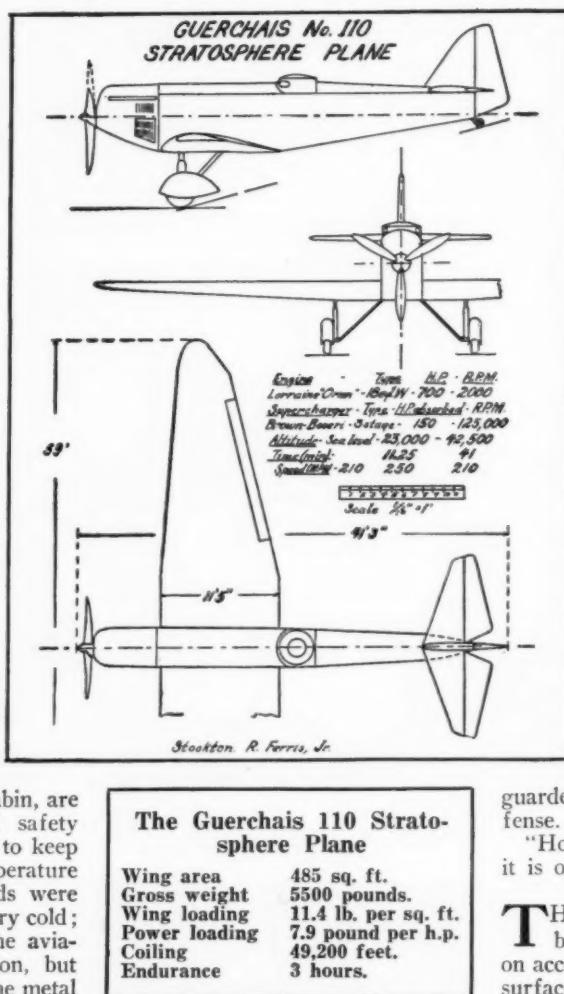
Inside, the cabin is fitted with a lot of devices new to aviation. Beside the controls for varying the pitch of the propeller, he will have devices for releasing more oxygen into the air of his little world and a series of boxes to absorb the carbon dioxide he breathes out. These boxes contain exactly the same compound used in submarines in the French navy; a derivative of soda-lime

(Na<sub>2</sub>O) which has long been used for this purpose. Part of the heat for the cabin (for it is fearfully cold up at 55,000 feet) will be furnished by the exhaust; the rest will come from an electric heater.

This same electric heater is attached to an arrangement for keeping the glass of the pilot's three little windows free from frost. These windows are double and made of safety glass, a centimetre (.39 of an inch) thick. If they were single, the difference in temperature outside and inside would crack them across quickly at high altitudes. Between the two sheets of glass, the electric heater will force a current of warm, dry air, which will both save the glass and keep frost off.

The cold, one of the greatest dangers a pilot has to face at high altitudes, is also responsible for another queer arrangement. The heads of all the heavy bolts that hold the manhole, where they project into the cabin, are hooded with little bells of safety glass. The reason for this is to keep the bolts at an even temperature throughout; if the inner ends were warm while the outer were very cold; it would not only exhaust the aviator's heat supply by radiation, but also set up severe strains in the metal of the bolts. And it wouldn't do to have one of those bolts dropping out at 50,000 feet.

Calculations show that even with the variable pitch of



#### The Guerchais 110 Stratosphere Plane

Wing area	485 sq. ft.
Gross weight	5500 pounds.
Wing loading	11.4 lb. per sq. ft.
Power loading	7.9 pound per h.p.
Cooling	49,200 feet.
Endurance	3 hours.

the propeller, traction will not be perfect at the most extreme altitudes. The most efficient altitude for the stratosphere plane will be about 25,000 feet—a height at which the ordinary plane loses speed and efficiency rapidly. At this height the stratosphere wonder will make a speed of 248 miles an hour, which is plenty fast enough. That means nearly 248 miles an hour ground speed. At 50,000 feet she will still be good for 200 miles an hour and will be above all the weather. No one knows what speed she will make at heights above that, because there is nothing on which to base calculations.

"But, if the variable pitch of the propeller is the whole trick," I said, "tell me how you vary it?"

"Ah!" was the inventor's reply. "That's just what I can't do. That secret belongs to the French war office, and is right now one of the most jealously guarded matters of the national defense."

"However, I can tell you this much; it is operated by an electric motor."

**T**HIS should be an easy model to build and a good flying model on account of the unusually large tail surfaces. Note that the cabin is far back, and that the machine, when ready for flight, is air-tight at all points. The coloring is grey, with bright blue trimmings.

## HERE ARE THE ANSWERS TO THE OCTOBER SILHOUETTE CONTEST

**T**HREE were some industrious young men throughout

the country it seems, who have the names of airplanes at their finger tips. Strange to say, the young man who wins this contest is a two-timer, for it is he who took first place in our August contest.

Upon winning the first contest, he wrote us a letter saying that he was very much excited over that fact. We are wondering what he is going to do when he learns that he has won a second time.

Before we tell you the names of the winners, however, we will list the correct answers for the October Silhouettes.

1. Macchi 52. Fiat about 800 h.p.
2. Fairey "Flycatcher." Bristol 500-550 h.p. Jupiter.
3. Boeing XP-936 pursuit. P&W Wasp 500 h.p.
4. DeH Tiger Moth. Inverted Gypsy about 120 h.p.
5. Stearman Business Speedster. W. Whirlwind R-760 240 h.p.
6. Morane-Saulnier MS222-C1. Gnome Rhone Jupiter 600 h.p.  
Series VII.
7. Gloster Gamecock. Jupiter VI 450 h.p.
8. Boeing Flying Boat 204. P&W Wasp 425 h.p.
9. Martin Torpedo Carrier Packard. T3M1.

10. Stearman (formerly Northrop) Alpha. P&W Wasp C 420 h.p.
11. Knoll. W. Whirlwind J-5 200 h.p.
12. Albatros D1. Mercedes 160 h.p.
13. Deperdussin. Gnome 110 h.p.
14. Ford (original). Liberty 450 h.p.
15. Sperry Messenger. Lawrence 60 h.p.

Now for the glad tidings. We wish to announce that Mr. William A. Wooding of 53 Marion Street, Brookline, Mass., is awarded first prize for October. We wish to congratulate him.

Winner of the second prize is William C. Drah of 146 Clifton Street, Malden, Mass. He turned in an excellent set of answers.

Mr. H. L. Kitselman of 410 West Howard Street, Muncie, Ind., takes third award. Kitselman sent in a very complete set of answers. However, he was mistaken on one or two of the ships.

If our readers wish us to continue the Silhouette Contests in future issues, we would appreciate a line from them.

We wish you all a very merry Christmas.

**W**HILE there were undoubtedly several planes at the 1932 National Air Races that were faster than "IKE," there were none that were better designed, or that proved more conclusively its builder's claims. Ben Howard wanted a fast plane for a small motor, and in its class, there were none better. Again and again, against planes equipped with larger and more powerful motors, "IKE" placed well above its class in the daily speed dashes. Flown by Gladys O'Donnell, "IKE" won the Aerol Trophy Race against a field of three other larger and reputedly faster ships.

The reason advanced for its success was that none of the competing racing ships entered in the different events, were better designed, or more skilfully flown. Howard himself, and his racing team mate, Bill Ong, made pylon turns at 200 miles per hour as sharply as one would make a turn in an automobile going ten. Very few other planes could stand this. Doolittle, in winning the Thompson Trophy Race, it was estimated, went three to five miles out of his way each time he went over the measured course,—because he did not make sharp turns. Howard's little ship could and did make sharp turns, thereby gaining in distance what it could not gain in actual speed.

In the model, we will not see the speed of the original, but we shall have an opportunity to observe how cleanly streamlined it is and how well it appears with its all white, glistening finish, trimmed with touches of shining black.

As for materials, BALSA is perhaps the most easily worked, and for that reason, its use is suggested. Directions, for giving the wood a smooth finish ready for paint, will be given later on.

#### LIST OF MATERIALS

Fuselage 1 piece balsa,  $8\frac{1}{2} \times 1\frac{5}{16} \times 15\frac{1}{16}$   
 Wings 2 piece balsa,  $5 \times 2 \times \frac{1}{4}$   
 Tail surfaces 1 piece balsa,  $3\frac{1}{2} \times 2 \times 2\frac{1}{16}$   
 Cockpit streamline and rudder 1 piece balsa,  $3\frac{3}{4} \times 1\frac{1}{8} \times 5\frac{1}{16}$

Wheel pants 1 piece balsa,  $2\frac{1}{4} \times \frac{5}{8} \times \frac{5}{8}$   
 Landing gear struts 2 pieces balsa,  $1\frac{5}{8} \times 1\frac{1}{16} \times 1\frac{1}{16}$

Wheels,  $\frac{1}{2} \times \frac{1}{8}$  (make out of balsa)

Propeller 1 piece balsa,  $3\frac{1}{2} \times \frac{1}{4} \times \frac{1}{4}$

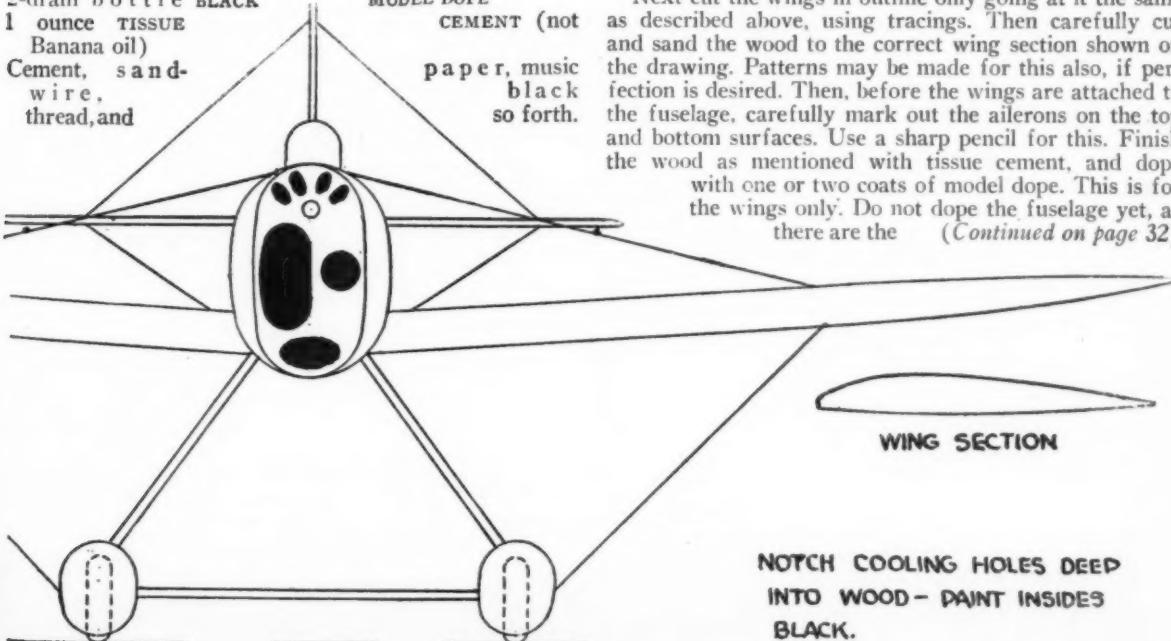
1 ounce WHITE MODEL

2-dram bottle BLACK

1 ounce TISSUE  
 Banana oil

Cement, sand-  
 wire,  
 thread, and

DOPE  
 MODEL DOPE  
 CEMENT (not  
 paper, music  
 black  
 so forth.)



# "IKE" IS HERE FOR YOU TO BUILD

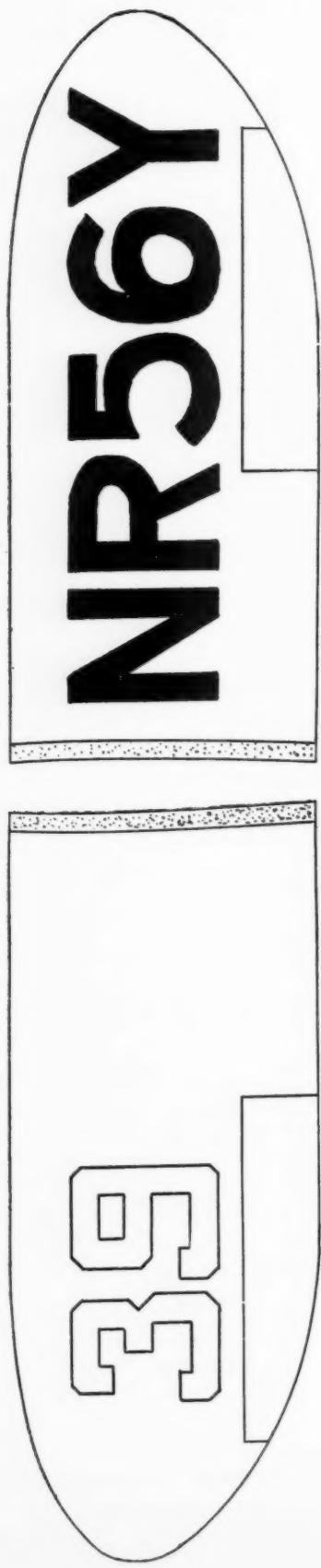
## Convenient Instructions and Plans to Build a Solid Scale Model of Ben Howard's Famous Racer

By Jo Howell

**L**AY out the fuselage side and tip directly on the fuselage block by making a tracing of the drawing and pencilling around the tracing onto the block. Never cut up a drawing as you might want to make another model or trade the plans of it to someone for their drawing. Next, carve with a sharp knife the general outline shown by the top and side views. Then with another tracing, make patterns (which should be glued on heavy cardboard) of the fuselage sections. These should fit closely on the fuselage at the exact points shown on the side view. Sand the fuselage smooth, fitting the patterns several times to make sure that you are giving the piece its correct shape. When the fuselage is exactly right, give a final sanding all over with old sandpaper which has the abrasive almost worn off. Then dope with several coats of tissue cement. This fills the wood and hides the cracks that all balsa naturally has. Sand carefully between each application of tissue cement, until the fuselage has a satiny gloss, and feels like glass to the touch. The piece is then ready for the white model dope. This same procedure should be followed when finishing any balsa surface for doping.

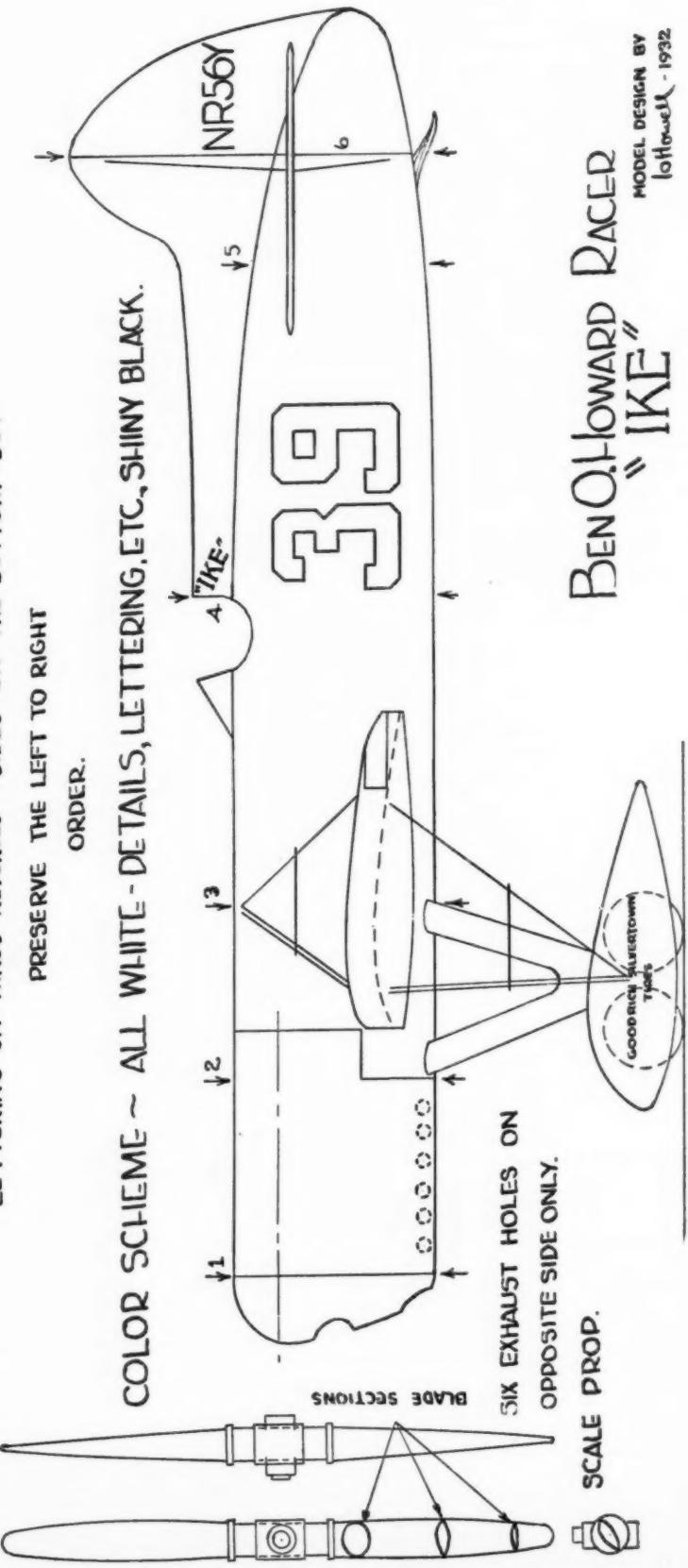
Next cut the wings in outline only going at it the same as described above, using tracings. Then carefully cut and sand the wood to the correct wing section shown on the drawing. Patterns may be made for this also, if perfection is desired. Then, before the wings are attached to the fuselage, carefully mark out the ailerons on the top and bottom surfaces. Use a sharp pencil for this. Finish the wood as mentioned with tissue cement, and dope

with one or two coats of model dope. This is for the wings only. Do not dope the fuselage yet, as there are the (Continued on page 32)



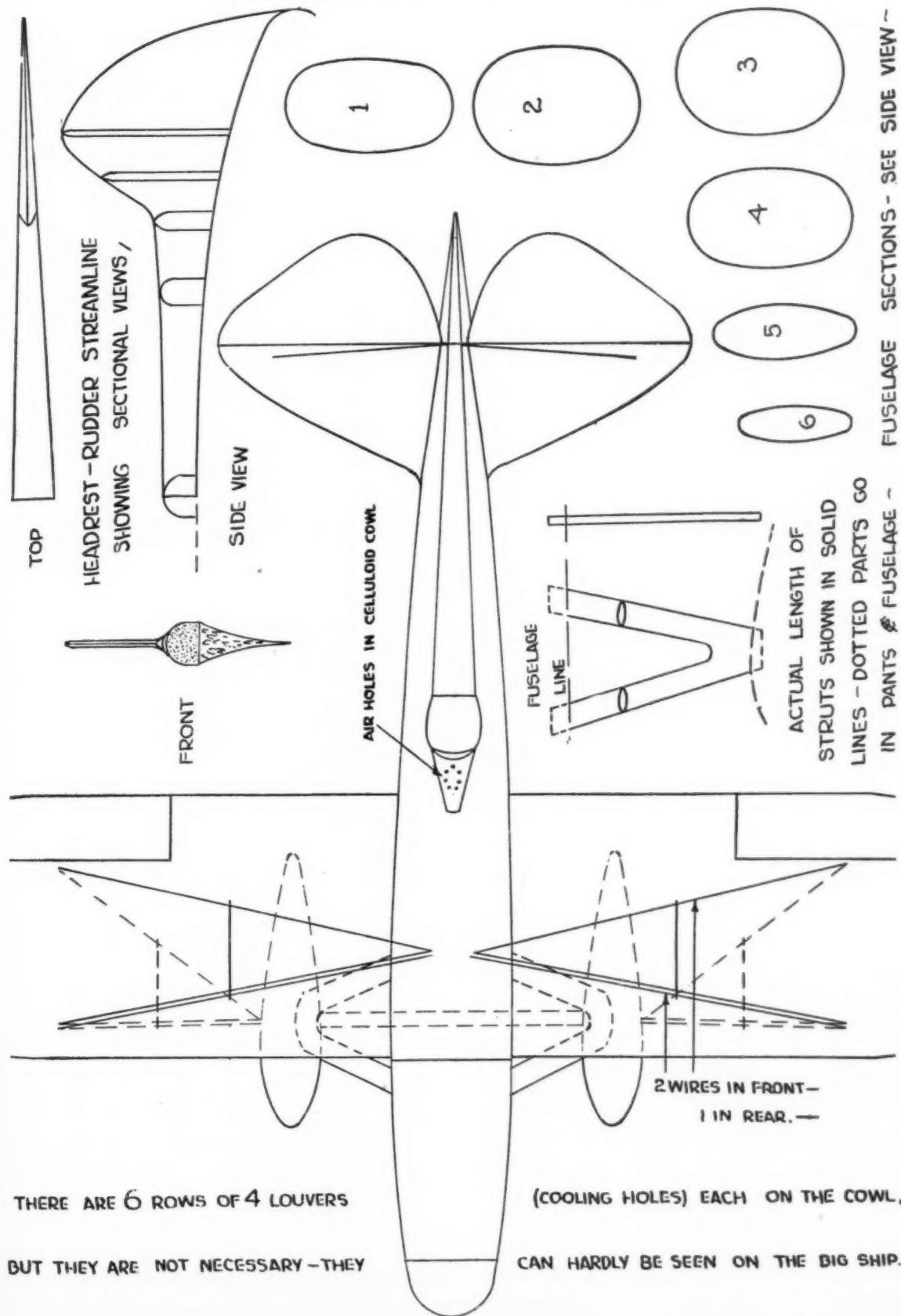
LETTERING ON WINGS REVERSES SIDES ON THE BOTTOM - BUT  
PRESERVE THE LEFT TO RIGHT ORDER.

COLOR SCHEME - ALL WHITE - DETAILS, LETTERING, ETC., SHINY BLACK.



MODEL DESIGN BY  
Lottwell - 1932

BEN HOWARD RACED  
"IKE"



**"IKE" is Here for You to Build**

(Continued from page 29)

tail surfaces and the landing gear to be made and attached before it is ready for the dope. Next with the black model dope, paint the wing numerals in. These are necessary for a scale model, especially of a *certain plane model*. The numbers as on the plan, should go on the right wing on the top and on the left wing on the bottom. Racing numbers go on the opposite wings in that order. These numerals can be cut out of black paper and pasted on, but a neat lettering job looks much nicer.

**T**HE landing gear is next. Cut it to the correct size shown and fit it in small holes cut neatly in the fuselage. Streamline it according to the sections given. The pants are made next, of balsa. Hollow them out or leave them solid, as you will. If they are solid, make the wheels show just a small bit at the bottom, as shown. If you desire the wheels to go round, the pants must be very carefully hollowed out. On the real plane they are of metal and fit the wheels closely. We must make ours from balsa and therefore must take care that the knife does not come through the wood. As the pants on the real plane are movable, yours can be also, but this is not recommended as there is not enough room to arrange this in the pants. If you desire, however, wire pivots may be bent so that the pants may pivot on them and come through to meet the flying wires from the wings. (See the front view.) The pants are then cemented to the cross-brace strut and are cemented to the landing gear proper. They are finished as above and doped white. Notice the tiny lettering that goes on each one of the pants, "Goodrich Silvertown Tires." This is done with a pen.

The horizontal stabilizer is cut in outline next and sanded smooth with the edges somewhat sharply pointed. Mark on them the division between the stabilizer and the elevators. Cement them to the fuselage, directly. They are equipped with brace wires so they do not need to be notched into the fuselage.

The cockpit streamlining and the rudder are made in one piece. The drawing is complete, showing all the necessary sections. Cut this in outline first, also, and then carve and sand to the correct shape. Fit this on the fuselage and sand out any irregularities that may have occurred. Then fit the finished wings on the fuselage and dope the whole plane, except the wings, of course, carefully covering all the joints.

**T**HREAD the brace wires, using an ordinary needle to push through the soft wood. Letter the numerals "39" on each side of the fuselage and the rudder. Mark out in black all the aileron, elevator and fin divisions.

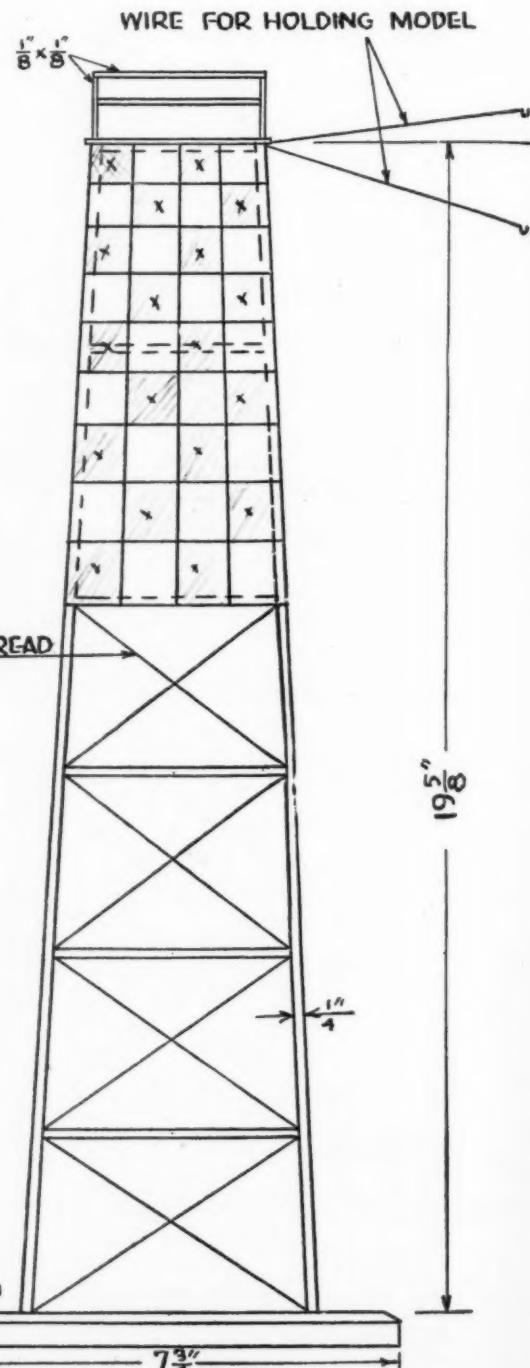
Bend the tail skid out of wire and cement in place, covering the marks with white. Paint the skid black. Paint black the cooling holes in the nose of the ship, first notching them out with knife. Remember that they have a flat inside and are not sharp pointed.

Cut the celluloid windshield from a bit of thin celluloid and punch seven small holes in a circle in it with a pin. These are air holes for the pilot. If you hollow out the cockpit, a small, tedious bit of unnecessary work, paint the inside black. And if you so desire, the louvers or air vents on the sides of the motor can be represented with a thin black line for each.

**The Pylon**

**I**N the modern type of pylon, used at the Air Races, only the top is covered with checkered cardboard.

Make the pylon out of white pine or balsa strips. Bevel the base as shown in the plan for neatness. String thread inside the structural (Continued on page 38)

**SUGGESTED****MODEL PYLON**  
FOR HOWARD'S "IKE"SCALE - APPROX.  $\frac{3}{16} = 1'$ 



## The Aerodynamic Design of the Model Plane

(Continued from page 16)

span that is dihedralized, the following simple formulas are given which will give the correct values for any such condition that may arise.

In order to determine the correct amount to elevate the tips of a wing which is partly straight and partly dihedralized, MULTIPLY THE PROPER VALUE OF TIP RISE FOR ANY FULLY DIHEDRALED WING BY

$$1 + 4 \left( \frac{S-2x}{2S} \right)^2$$

in which expression (S) represents the total span of the wing, and (X) that part of each half wing that is to have no dihedral angle. See Fig. (46). All values given in inches.

For example, it has already been stated that in the case of a monoplane, the center of gravity of which is high (line of thrust usually close to the wing), each wing tip should be raised (1) INCH FOR EVERY FOOT OF SPAN, in order to establish the proper amount of dihedral. This is in the event that the whole wing span is dihedralized. The question is—How much shall each wing tip be raised if the wing is dihedralized for only the two outside halves, of each half wing, provided the total span (S) equals (24) inches. (X)

then equals ( $\frac{1}{2}$ ) of (12), or (6) inches. Substituting in the formula, we have

$$1 + 4 \left( \frac{24-12}{48} \right)^2 \text{ times } (2 \text{ inches}) = \text{correct elevation for wing tips.}$$

Then simplifying:

$$\left[ 1 + 4 \left( \frac{12}{48} \right)^2 \right] (2) = \left( 1 + \frac{4}{16} \right) 2 = 2\frac{1}{2}$$

The correct amount to raise each wing in this case is, therefore, ( $2\frac{1}{2}$ ) inches.

### Combination of Laterally Stabilizing Influences

ANY one of the methods of stabilizing your model just described may be sufficient to give your plane the necessary amount of lateral stability. However, the best results can be obtained through the use of a combination of two, or all three of them. Usually a combination of a sweep-back and a low center of gravity, or a dihedral angle and a low center of gravity is sufficient.

### Low Center of Gravity with "Sweep-Back"

When using this combination, the sweep-back given to the wings should be the same as if it were used alone, as described under the heading of "Sweep-Back". The center of gravity should not be less than

a distance of (1/30) of the span below the center of lift, or in this case, below the center section of the wing.

This will insure proper results, though the possibility of good results is not precluded in some instances, when the center of gravity is nearer to the wing than this distance of (1/30) of the span. However, if you wish to play safe, follow the above rule.

### Dihedral with Low Center of Gravity

So far in our discussion we have considered cases in which the dihedral angle is used as a sole means of insuring stability, without the aid of any other stabilizing influence used in conjunction with it. The figures and examples that have been given are correct for such a condition, or, in other words, for cases in which stability is not aided by the effect of a low center of gravity.

However, the most effective and most efficient method of securing lateral stability is through the use of a combination of a dihedral angle, and a low center of gravity.

As our space is limited here, we will discuss, and give data on this interesting problem, in our next issue. A new system for correcting rocking tendencies will be discussed also. The theory involved has been originated by the author, and to his knowledge has never been set forth in any publication.



This model built by Herman Lieberman of Norwich, Conn.

### 5-ft. Scale Replica of GRAF ZEPPELIN

One of the most beautiful scale models ever designed, and anyone can build it. Everything included to the last detail, gondolas, fin, cabins, etc. Metalized parts. In demand for displays, show windows, etc. (Name may be changed to AKRON.) What a welcome Christmas gift this model will make.

**150**  
Prepaid

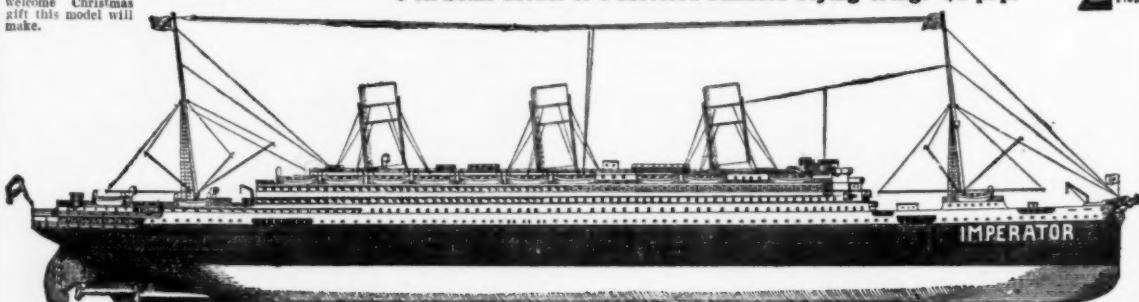
Kit of parts with full instructions showing just how to complete the ship model.

## Nothing Can Compare with this Mammoth 5-ft. Model of the Famous Liner • • • Sister Ship of the S. S. Leviathan Order These Models for Christmas!

Do something entirely different in Model Building. Build a model of an Ocean Greyhound (the S.S. Imperator, name may be easily changed to S.S. Leviathan), one of the two largest ships afloat! All parts in original color! Model is very lifelike! Parts are laid out in full size, ready to be cut out and reinforced with plywood or cardboard. No detail is omitted! Model has high sales value and may be rented out to stores, movie houses or exhibitions to attract crowds. When complete it is 5 feet long and 16 inches high. Very impressive—exactly like models displayed by Steamship Companies. Work is very fascinating! Your dad will want to help you! No unusual skill required! Start early to have it ready for Christmas!

**5-ft. Scale Model of 4 Motored Junkers Flying Wing. \$1 p.p.**

**250**  
Prepaid



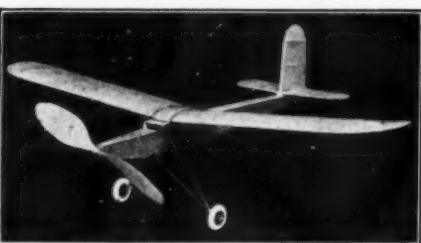
Remit by check, postal or Express Money Order, for these fine colored models and be the leader in your crowd. You never saw anything as beautiful as these.

**BILDON COMPANY**  
709 Wenonah Ave., Dept. M-S, Oak Park, Ill.



## Outdoor Cabin Tractor

One of the snappiest flying models in its class, proper engineering and all balsa construction does it. This plane has a double surfaced, high lift wing, 30-inch span, large braced fuselage, extra strong landing gear to withstand the shocks of outdoor flying, and a large, wide-bladed propeller to keep it up fast for long endurance flights. The kit contains complete plans and instructions, stamped ribs, large tube cement, 1 oz. bottle clear dope, pair celluloid wheels, and all materials needed to complete the model. Price ..... Add 10c for Postage



**"Bones!" Balsa Wood**  
Our Balsa Wood is the lightest and best balsa to be had. It is clear straight-grained stock cut to convenient sizes.

**36" Strips**  
Straight-grained genuine balsa dowels in the following sizes:  
1/8 diam. -18" .01 for .05  
2/16 diam. -18" .01 for .05  
1/16 x 1/4 .01 6 for .05  
1/8 x 1/4 .01 6 for .05  
1/8 x 3/16 .01 6 for .05  
1/8 x 1/4 .02 5 for .09  
1/8 x 3/8 .02 5 for .09  
3/16 x 3/16 .02 5 for .09  
3/16 x 1/2 .02 5 for .09  
1/4 x 3/8 .03 5 for .12  
1/4 x 1/2 .04 5 for .12  
3/8 x 3/8 .05 5 for .22  
3/8 x 1/2 .06 5 for .25  
1/2 x 1/2 .08 5 for .35  
1 x 1/2 .17 2 for .30

**40" Strips**  
1/8 x 3/8 ..... .04  
1/8 x 1/2 ..... .04  
3/16 x 3/8 ..... .04  
3/16 x 1/2 ..... .05

**Sheet Balsa**  
1/32 x 2 x 36 ..... .04%  
1/16 x 2 x 36 ..... .05%  
1/8 x 2 x 36 ..... .06%  
3/16 x 2 x 36 ..... .09  
1/4 x 2 x 36 ..... .11

**Balsa Planks**  
1 x 3 x 36 ..... .33  
1 x 6 x 36 ..... .60  
2 x 3 x 36 ..... .60  
2 x 6 x 36 ..... .90  
2 x 5 x 40 ..... .90

**Balsa Propeller Blocks**  
1/2 x 3/4 x 5 ..... .04  
1/2 x 3/4 x 6 ..... .05  
5/8 x 1 x 7 ..... .05  
5/8 x 1 x 8 ..... .05  
3/4 x 1 x 8 ..... .07

**Balsa Propeller Blocks**  
1/2 x 3/4 x 5 ..... .04  
1/2 x 3/4 x 6 ..... .05  
5/8 x 1 x 7 ..... .05  
5/8 x 1 x 8 ..... .05  
3/4 x 1 x 8 ..... .07

**Celluloid Wheels**  
3/4 ..... .06  
1/2 ..... .06  
5/8 ..... .09  
1/2 ..... .11  
1 1/2 ..... .11  
1 1/2 ..... .11  
1 1/2 ..... .17  
Bushings ..... 4 for .02

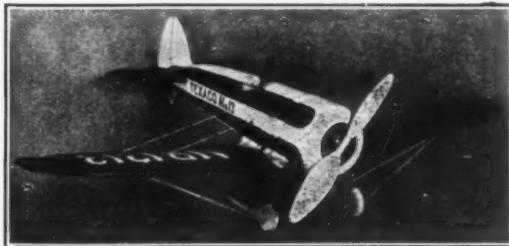
# A "REAL" Merry Xmas —for EVERY Boy in America

You Bet!—and we mean it, too. Just ask the boys of America who have been building Madison Models all year and they'll tell you how much of a KICK they get from building our planes. Madison's LARGE VARIETY and Madison's EXCEPTIONALLY LOW PRICES will help you solve that Xmas Gift Problem. As a gift from one boy to another boy or as a gift from Sister to Brother or from Parent to Son there's nothing that the boy will enjoy more than a Madison Kit to build a "Plane that will really Fly."

### FREE a Beautiful GLIDER KIT

Everything to Complete a  
Real Model Glider, with a  
Purchase of \$1 or More

\$1.50



### Complete PLANS for

**Winnie Mae or Bellanca  
Pacemaker 15 Inch** —  
Full Size each ..... 15c  
**Outdoor Cabin Tractor** .10c  
**Twin Pusher** ..... 10c  
**3 R.O.G. Stick Models**. 10c  
**Travel Air Mystery Ship**  
24 Inch Full Size ..... 40c



**Dummy Radial Engines**  
Celluloid, 9 cylinders, .00%  
3 in. diam. Each ..... .30  
**Musie Wire**  
Strong, light and stiff.  
Sizes: .014, .020, .028, .036 per ft. .... .12  
.034, 3 ft. packages .02 .010 per ft. .... .12

### READ BEFORE ORDERING

In Order for Prompt Delivery Please Comply With  
Instructions Below

- Orders under 25c not accepted—due to our very low prices.
- Add 25c for packing and postage on orders up to \$1.50, and on orders for \$1.51 and over add 10c for packing and postage charges.
- Add 10c extra to above charges on Balsa blank orders less than \$1.50 West of the Mississippi and Canada.
- Postage stamp, Canadian or Foreign coin not accepted as payment.
- Remit by check, postal or express money order. Make payment to MADISON MODEL AIRPLANES INC., 134 Livingston St., Brooklyn, N. Y.
- Add 5c for insurance against breakage in transit.

**Canadian Charges**—Add 25c for packing and postage on orders up to \$1.50. On orders of \$1.50 and over add 10c for packing and postage. Postage stamp, Canadian or foreign coin not accepted as payment.

Dealers and Clubs Write for Special Price List

### TWO-IN-ONE-KIT

Contains the around-the-world  
"Winnie Mae" and the "Trans-  
atlantic Bellanca," Both 15" wing spans. Kit contains full  
size plans, bulkheads, large tube  
of cement and all other materials  
needed to complete these two  
wonderful models. Get yours now.

\$1.25  
POSTPAID

### Travel Air Mystery Ship

A 24-inch flying model of the famous "Travel No. 13." Its realistic appearance and excellent flying qualities make it one of the most popular and fastest selling models on the market. The kit contains full size plans, complete instructions, aluminum N. A. C. A. cowling, stamped ribs and bulkheads, large tube cement, 2 oz. red dope, 1 oz. bottle white dope, veneer fuselage covering, pair of celluloid wheels. easy to fly, wheels and all other materials needed to complete the model. The kit is packed in a strong, crushproof box. Price

\$2.50

Add 10c for Postage

### Outdoor Twin Pusher

A twin pusher that has actually flown 12 minutes not once—but several times! This plane has several features which cannot be found elsewhere. It has a 40-inch "A" frame that is a marvel for lightness and strength, a 36-inch, high cambered, tapered wing, and two 12-inch, high pitch propellers powered by 68 feet of 7/8 inch, clear rubber. The kit contains complete plans and instructions, aluminum, celluloid, veneer and all other materials needed for the construction of the model. Price

\$1.50

Add 10c for Postage

### Thrust Bearings

Japanese Tissue. A strong, light tissue for covering your completed models.  
Large size ..... .02  
Per Doz. ..... .20

Small size, .025 hole. Each ..... .02  
Per Doz. ..... .25

Colored Jap Tissue

Colored Jap Tissue, Red, Blue, Orange, Brown.

Size ..... .02

Per Doz. ..... .07

Wood veneer paper for scale model work.

Sheet 20 x 30 ..... .15

Clear Dope

This is a special acetate dope thinned down to meet the requirements of model airplane usage.

2 oz. can ..... .13

4 oz. can ..... .25

Pint ..... .50

Colored Dope

Real pigmented aircraft dope. Do not confuse this with dopes of inferior quality. Red, Blue, Yellow, Orange, Black, Olive Drab and Silver. Order by color.

2 oz. can ..... .13

4 oz. can ..... .25

Pint ..... .50

Acetone

To thin out your heavier

2 oz. can ..... .11

4 oz. can ..... .20

Pint ..... .50



**MADISON MODEL AIRPLANES, Inc., 134 Livingston St., Brooklyn, N. Y.**

Our Kits and Supplies Are Handled by Leading Department Stores—ASK FOR THEM

# LOOK! THIS BIG STEAM ENGINE

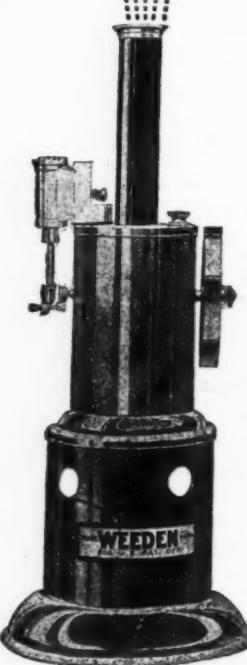


GIVEN  
YOU

HERE'S your chance to get this husky, smooth-running steam engine. Look at the picture. Isn't it a beauty? Manufactured by world's leading maker. Fine quality and highly finished in bright colors. Has heavy fly wheel, smooth-running piston and heavy cylinder. Strong boiler and fittings. Large fire box. Pulley wheel that runs mechanical toys. Runs on alcohol or canned heat. Big, powerful, highest quality steam engine. A real beauty you will be proud to own. Just what you have been waiting for and you can have it FREE! Read Special Offer.

### **Smashing Adventure Tales**

*The Open Road for Boys* is a 50-page magazine publishing sparkling stories of air adventure, sport stories, articles by famous coaches and star athletes; adventure stories of the barren wastes of the Arctic, of the wild jungles of the Tropics, of the battlefields of the World War, of the cow towns of the Old West, and of the mysterious lands of the Far East; business stories, school stories, and many others. In addition four great serials, each worth \$2.00 in book form. World-wide correspondence club, stamps, Open Road Pioneer Club, best dope on hunting, fishing, camping. Contests galore, with plenty of prize money. Red-blooded stories for red-blooded he boys.



### **SPECIAL OFFER**

Regular yearly subscription price \$1.00. To make new friends we will send you next twelve fat issues for \$1.00 and send you also this big steam engine FREE. Act quickly.

Ladderman,  
**THE OPEN ROAD FOR BOYS,**  
130 Newbury St., Boston, Mass.

**100% Satisfaction Guaranteed**

Gee whiliekins! You bet I want the big STEAM ENGINE and The Next Twelve Big Issues of THE OPEN ROAD FOR BOYS all for only \$1.00. Here's My Dollar. Send OPEN ROAD One Year and Rush my Steam Engine.

NAME .....

Street .....

Town ..... State .....

Canadian Postage \$1. Foreign Postage 50c extra.

### **Build a New Heath "Parasol"**

(Continued from page 10)

care not to get any cement near the edges and place them together in the position in which they will be when completed. See the drawing, and cement along the lines N, N. Mark the blocks as shown in plan with a soft pencil and shape them roughly with a knife, sanding the final shapes. Then, by inserting the point of the knife at the rear of the blocks, force them apart. Hollow them out according to the drawing, carefully, and sand the inside smooth. Glue the thrust bearing, a large one, in place, first bending it as shown. Then glue the two pieces together, making the block as shown. Place the two small pieces inside the nose block for the nose pins, using plenty of cement all around the holes. The pins are used for keeping the block in place; the rubber holds it on the fuselage.

#### **Struts**

Make the two long struts, taking care that they are the exact size given. Round the edges before finishing. Next, make the two smaller struts for the wing center. Take care that they are the exact size given, for if they are not, the wing will not be at the correct angle of attack.

#### **Covering**

Covering the plane should begin with the wing, for this is the part that takes the most paper. Cut the paper for the wing into four parts, for the top and bottom on each side. Cover the top first, working from front to rear. This will help you keep the surface smooth, making a better looking model. Do not stretch the paper too tight or the wing will be twisted when doped. Remember to keep the grain of the paper running across the wing.

Paper the fuselage in small sections, preferably between two formers at a time. Keep the grain of the paper running across the fuselage width. Cover the top and bottom first, and then the sides. Trim carefully with a sharp pointed razor blade all around the sections papered, cutting all away from each wood part. Trim down the center of the wood formers and braces, leaving the paper in small, neat panels.

To cover the tail parts wet thoroughly with tissue cement all the wood and place it down on the paper. Pull the paper away from the board, and the wood will come with it. Turn the papered side up and allow to dry. Cut around the edges with the razor and proceed to the other side. The horizontal stabilizer does not have to be papered on both sides. On the models that the writer has built all were covered on the upper side only.

#### **Assembly**

CEMENT the rudder to the fuselage, and the stabilizer to that, as in the drawing. Cut small holes through the paper on the wood where the joint is to be made before cementing, and the joint will hold better. Cut holes through the paper on the front of the fuselage for the front center wing strut, and cement it on, placing the small angle strut shown in the side view at the same time. Cement in place the rear center strut. Cut holes through the paper for the struts at the points of contact of the struts and the wing, and glue the wing in place. Line up the wing carefully, making

(Continued on page 40)

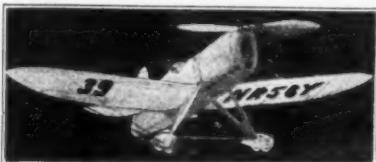
**The Perfect Christmas Gift—A PIONEER Kit!!**



# Hitting On All Six

**For Christmas—The Six Best Selling Models from Pioneer!**

The popularity of these models assures you that as a present, or as a purchase, you will be delighted with any of them. None of them are expensive, yet every one makes an accurately scaled, easily flown model.



## Pioneer Has Pioneered Always!

Go back thru your magazines, see for yourself who was first to present accurate models of the old Howard racer, Laird Solution, Gee-Bee, Akron Fighter, Curtiss Attack and now the new Howard and Douglas Gull-Wing!



### New Howard Racer!

A 20½ in. model of Howard's new "Ike," latest high speed creation in the racing field. Model is accurate to scale, wt. 7/10 oz., all material to dimension, prop blanked out, full size layouts and ample instructions. Easy to build, it makes a keen job and flies beautifully. A model you will thoroughly enjoy. NX39 Howard Racer \$1.50 Kit postpaid .....

### Get Your Order In Early—Avoid Delay!

Last year our resources were taxed to the limit to get orders out during December—help us give you better service by getting your order in early. Parcels will also come with less chance of breakage if the heavy mail near Xmas is avoided.



### Douglas Gull-Wing!

That new kit of Pioneer's that is a how for flying. A big 24 in. model with a good many of the difficult parts semi-formed, which helps a lot in hurrying up construction. All stock to dimension, full size work sheet layouts, etc., makes building easy. NX24 Douglas Gull-Wing Observation Kit \$1.95 complete .....



### Curtiss Attack!

The most diabolical machine of destruction ever to take wings! With its load of bombs, six machine guns, and 200-mile speed, the destruction it can cause is terrible, yet it is practically impossible to bring down in combat. Pioneer's model is a big 26 in. machine, wt. 18/10 oz., duration over 90 sec. A great many of the pieces are semi-formed, instead of being rubber stamped on wood, which makes construction much simpler and assures accuracy. Everything, even to insignia, comes in this kit. NX22 Curtiss A-8 Attack Plane Kit complete \$2.25 postpaid .....

Add 5c Additional for Safe  
Carriage in Mail



### Akron Fighter!

This little Curtiss fighter was developed especially to be carried inside the Dirigible Akron. Pioneer's 24 in. model is very complete with celluloid wheels, motor, cowl ring, hand-carved nine-inch prop, all stock to dimension, etc., and is a wonderful looking ship. Full size layouts make building easily understood. NX25 Akron Fighter \$2.50 Kit complete postpaid .....

### On File—Over 1000 Letters Like This

"I entered my Curtiss A-8 Attack plane in a contest against fifty-five other planes and Col. M. D. Mann and his two assistants, without hesitation, awarded it first prize."

Signed J. E. MILLER, Chicago.

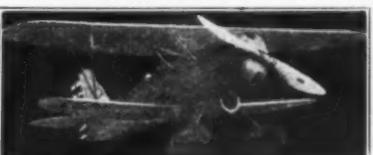


### Sport Biplane!

A detailed biplane model of a Laird, fitted with celluloid cowl, pants, wheels, hand-carved prop, all stock to dimension, full size layouts and instructions, a model that will easily fly over 60 seconds when properly built and adjusted. 24 in. span, wt. 1 ½ oz. Pioneer method of fuselage construction eliminates warped and twisted curves that spoil flying qualities. NX16 Laird Biplane \$2.50 Kit complete .....

### Popular Models From The Pioneer Line

GB4 22 in. Span Kit .....	\$2.35
L400 24 in. Solution .....	2.50
NX17 Howard Racer .....	1.35
NX20 Bellanca Cabin.....	1.10



### Curtiss Hawk!

A kit designed to stunt, roll, loop and fly upside down, as well as on an even keel. Stunts controlled by bending flippers and fin. A master model, 15 in. span (note not 12 in.) that gives you more than your money's worth in a low-priced kit. NX23 Curtiss Prestone Cooled Hawk \$1.10 P6E Kit .....

### Send 10c Coin—

### For New 60-page combined "Model Flyer's Guide and Catalog"

Here is a bargain—the "Guide," which has never sold for less than 25c before, combined with Pioneer's latest catalog of Kits and Supplies, 60 pages chock full of hard-to-find "low down" on model designing! Be sure you get your copy, it will be your model "bible."

No Stamps Please, a Dime Brings It

**Order Directly from this Ad—Add 5c for Postal Insurance**

**Pioneer Model Airplane Supply Co., Champaign, Illinois**

# DON'T

## OVERLOOK THESE REAL VALUES

18" Balsa Strips	Para Rubber
1/16 x 1/16 .25 for .05	.045 .35 ft. .08
1/16 x 1/8 .22 for .05	1/8 flat .25 ft. .07
1/16 x 3/16 .20 for .05	1/16 square .25 ft. .08
1/8 x 1/8 .20 for .05	3/16 flat .25 ft. .11
1/8 x 1/4 .10 for .05	
18" Sheet and Plank	Thrust Bearing
Small or large doz. .15	Washers
1/32 x 2" .7 for .10	1/8" dia. doz. 01% gr. .10
1/16 x 2" .5 for .10	1/16" dia. doz. 01% gr. .10
1/8 x 2" .5 for .10	Insignia Sheet
3/16 x 2" .4 for .12	24 different .10
1/4 x 2" .4 for .15	Clear Dope Thinner
1 x 2" .1 for .15	2 ozs. .07
2 x 2" .1 for .20	4 ozs. .12
2 x 2" lengths double	Pint .49 Quart .75
For 36" lengths double	Colorless Cement
18" length cost.	2 oz. .10
Propeller Blocks	1 pt. .10
5" x 2" .7 for .05	Japanese Tissue
6" x 2" .8 for .05	Jap. Tissue .2 for .05
7" x 1" .3 for .05	Colored Jap. Tissue
8" x 1" .3 for .07	red, blue, orange,
10" x 1" .2 for .07	ivory, drab, white
Celluloid Parts	per doz. .20
%" diam. .05	Reed .16 reed .6 ft. .08
1" diam. .07	1/16x1" x4l" Bamboo .12 for .08
1 1/2" diam. .09	1/16x1" x4l" Bamboo .12 for .08
3" cyl. motor .13	1/16x1" x4l" Bamboo .12 for .08
1 1/2" cyl. motor .15	Piano Wire
All sizes .5 ft. .02	1/16" dia. .02
Boeing P-12 Lockheed Vega Stinson Moen, Tivoliair Myrt, British S.E.5 Gowpath Camel Fokker D-VIII Niueport Scout	1/16" dia. .02
These construction sets contain complete material, stamped ribs, all balsa strips cut to size, wire parts all formed, cement, dope, rubber, tissue, celluloid wheels, full-size plans and instructions, etc. Packed in single and attractive boxes. These are 15" flying scale models. Guaranteed to fly.	

**KITS 50¢ PLUS 15¢ POSTAGE**

No orders under 50¢. Add 15¢ for packing and postage to orders under \$1.50. Orders over \$1.50 add 10 per cent. When ordering 36" lengths add extra 15¢. Money Orders Preferred. See Price List.

Discounts to Clubs and Dealers  
MERCURY MODEL AIRPLANE CO., Dept. 6  
1582 Lincoln Place Brooklyn, New York

## LOWER "Holiday" PRICES

You can make an expensive gift at little cost by sending your order to

"VICTORY"

Balsa Wood Grade AAA

36" LENGTHS

Strips	Sheets
1/16 x 1/16 .11 for .05	1/12 x 2" .2 for .07
1/16 x 1/8 .12 for .05	1/16 x 2" .2 for .07
1/16 x 3/16 .10 for .05	1/16 x 3" .2 for .15
5/32 x 3/32 .10 for .05	3/32 x 2" .2 for .09
1/8 x 3/8 .10 for .05	1/8 x 2" .2 for .09
1/8 x 5/16 .10 for .05	1/8 x 3" .2 for .19
1/8 x 1/4 .10 for .05	1/8 x 4" .2 for .22
1/4 x 1/4 .7 for .05	1/16 x 2" .2 for .12
1/4 x 1/4 .3 for .05	1/16 x 3" .2 for .22
1/2 x 1/2 .3 for .04	1/16 x 4" .2 for .22
1/2 x 3/4 .2 for .11	1/4 x 2" .2 for .15
1 x 1" .2 for .05	1/4 x 3" .2 for .25
Balsa Planks	
1 x 3" .30	Colorless cement .2 oz. \$1.10
2 x 2" .40	Clear dope .2 oz. .05
2 x 3" .40	Colored dope .2 oz. .05
2 x 4" .50	Banana oil .2 oz. .08
2 x 5" .60	Acetone .2 oz. .05
2 x 6" .80	Wire, all sizes .01

And many other wonderful buys—prop blocks, Bamboo, reed, covering materials, celluloid wheels, etc.

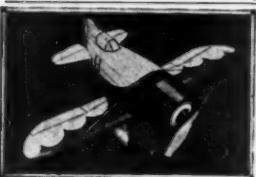
Kit, complete, 20" wing spread \$55 P.P.

Write for details

"FREE PRICE LIST"

## VICTORY

Model Airplane Supply  
6725 10th Ave., Dept. A  
Brooklyn, N. Y.



See Racer, the fastest land plane in the world, recently flown to a prize-winning by Boardman. It is reported to have attained a speed of more than 300 M.P.H. Price of plane, only, 15¢.

Price of complete construction kit.....\$1.50

Rush in your order and see how quickly the world's fastest racer can get to you. And we want to show you our many other planes, all designed by the greatest model designer in the United States, such as the High Wing Pursuit Model B-I. Plans only, 10¢.

Complete construction kit and plans.....\$1.00

Fairchild "24" Cabin Airplane, plans only, 15¢.

Complete construction kit and plans.....\$1.50

All the following planes 10¢ each: Ansaldi, the great Italian war plane; Albatross; Bellanca, Jr.; Boeing, P-12B; Baby Hydro; Bernard; Fokk, Amphib.; Fok, D-8; Fok, Tr.; Gloster IV; Hawk P-SE; Hell-Diver; High Wing; Kinner "B" and "C"; S. E. 5; S. E. 8; A. D.; Sopwith D.H.; Stinson; Vega; Pfalz; Lalem; Ott Hydro; etc. We also want to send you circulars describing our model airplane gasoline engines, from 1 bird power to 1 H.P. Just send us a post card.

**BUILDERS OF BUSINESS INTERNATIONAL**  
Model Aviation Div., 28 N. Clinton St., CHICAGO

## "IKE" is Here for You to Build

(Continued from page 32)

members to represent brace cables. Make the top out of thin balsa and the railing from 1/8 square balsa. Round off the rail so that it appears to be real.

For the checkered covering, lay out two sheets exactly alike, one each for the opposite sides. Color them red and white or orange and black, making sure that the colors alternate at the corners. Make the size of the squares diminish as they near the top, so that all squares are complete, otherwise some would be mere triangles. Color the open wood brown or black to represent iron. Color the base brown or green to represent the earth. Hang the plane with small diameter wires in such a position as to look as though it were making a sharp pylon turn.

## Human Cannonballs

(Continued from page 8)

properly. He then signifies with a nod to those on deck that his plane is ready.

He opens his throttle wide and braces his hand on his hip in order that the sudden acceleration will not close the throttle and leave him without power. He gives one last quick look at his instruments and when satisfied puts his right arm over the cockpit in a horizontal position. When he withdraws his arm he is giving the signal to shoot. Grasping the control stick firmly he gives the slightest up elevator to the controls for this will insure that the nose of his pontoon is at least up if he should strike the water.

DRAWING in his chin he sits tense and alert. It is desirable that the plane be shot off while the ship is rolling upward on the side over which the catapult is trained. Otherwise, the plane may be shot into the sea. The catapult crew wait until the first up roll after the pilot pulls in his arm. Then the valve is opened and the compressed air rushes in to drive down on the piston.

The pilot feels his plane begin to move very slowly down the track. A nice, gentle start. Then it begins to pick up speed in the most astonishing fashion. He is thrown back into his seat in no diffident manner. Had he not taken the precaution to hold his chin tightly to his neck he would have had it snapped like a whip. He finds it difficult to breathe. The ship's mast is moving past at a rapid rate of speed. If only the constantly increasing velocity would ease up a bit to permit him to catch his breath! But, no! On and on, faster and faster, he goes!

The plane responds to the air under its wings and the surfaces begin to carry part of the plane's weight. The pilot can feel through the controls that his craft would fly if turned loose in the free air. The end of the track is close at hand now but still the acceleration is relentless and is pushing in the small of the pilot's back. At last the car stops, the plane-securing straps are thrown clear and the airplane is thrown bodily into the air. The pilot finds that his machine is in a slight stall. The engine now begins to take charge and pulls the

(Continued on page 42)

## Xmas Gifts



24" NEW FOKKER HOSPITAL SHIP



24" U.S. NAVY "CORSAIR"



for those who want the most complete kits offered today,  
**here they are!**

All big ships (24" wingspan) all flying scale models, and what marvelous gifts they make! All parts, including bulkheads, ribs, etc., all clearly stamped on highest quality parts. The sets are complete with full-size plans and instructions, everything to complete the models, attractively boxed. All models 2-foot wingspan. All one price



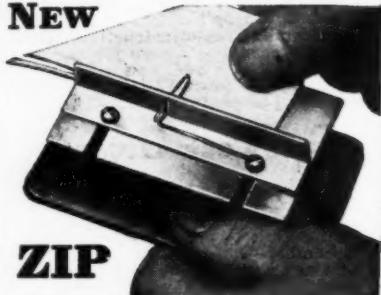
24" U.S. MARINE "FALCON"

\$1.25 EACH Prepaid

Place your order now and you will have plenty of time to complete your model. Christmas. Remit by check or money order. Send 3¢ stamp for detailed price list.

HUB MODEL AIRPLANE & SUPPLY CO.  
475 Brook Av., Bronx, N.Y. (Dept. M)

## NEW



## ZIP

## BALSA WOOD STRIPPER

Patent Applied For

Boys—you can now cut your own balsa sticks, channels, tees and angles, quickly and accurately, in widths from 1/32" to 1/4", and up to 1/4" in thickness.

ZIP saves money—makes model building more exact and interesting.

Strongly made of polished alloy metal with renewable rotary blade. Hundreds already sold—you take no risk—money back if you want it. Order now!

Make extra money by being our agent

Price 75¢ each, Postpaid

## AERO MODEL BUILDERS' GUILD

235 Halsted Rd., Elizabeth, N. J.

## GIVEN! BUY NOW!

A large 2-oz. bottle of cement Free with every order over \$1.00. HURRY! Send your order now. This offer expires December 31st.

### Grade "A" Balsa

1/16 x 1/16 .30 for .05	1/8 x 3/8 .30 for .05
1/16 x 1/8 .25 for .05	1/4 x 2" .30 for .05
1/16 x 1/4 .18 for .05	1/32 x 2" .25 for .05
3/32 x 3/32 .22 for .05	1/16 x 2" .25 for .05
1/8 x 1/2 .22 for .05	1/8 x 2" .25 for .05
1/4 x 1/4 .11 for .05	1/4 x 2" .25 for .05
1/8 x 1/4 .11 for .05	1/4 x 3" .30 for .05

36" lengths are double 18" lengths. Cost plus 10%

### Propeller Blocks

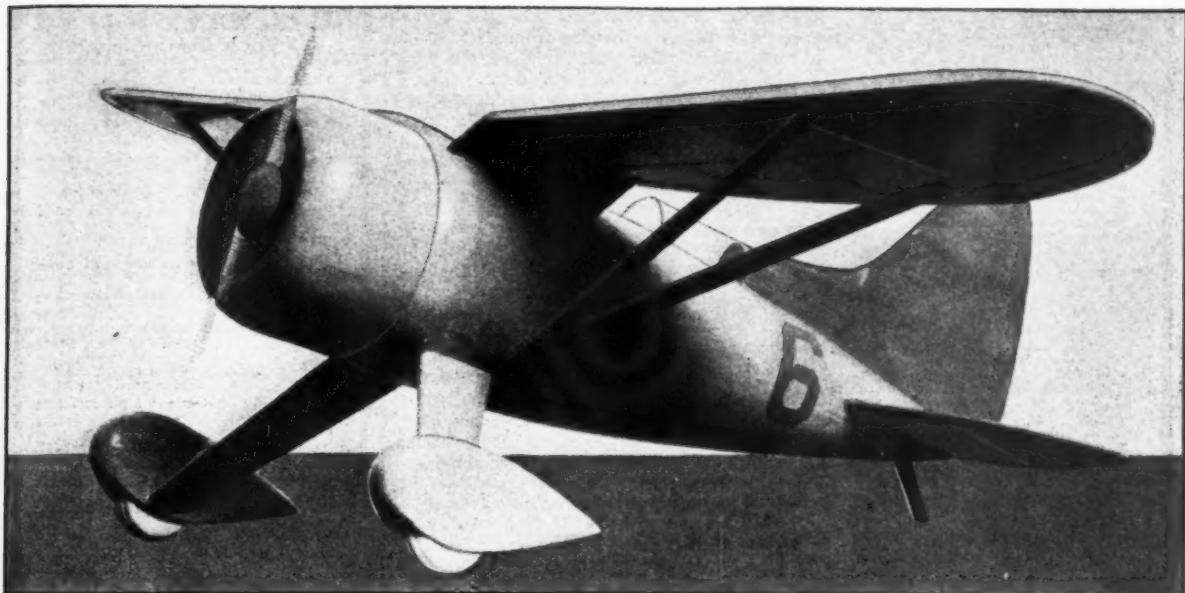
1/2 x 3/4 x 6" .07 for .05	5/8 x 1 1/4 x 12" .2 for .10
5/8 x 1 x 8" .3 for .05	3/4 x 1 1/2 x 11" .2 for .09
5/8 x 1 x 12" .2 for .05	5/8 x 1 1/2 x 10" .2 for .08
5/8 x 1 1/4 x 12" .2 for .05	5/8 x 1 1/2 x 9" .2 for .08
5/8 x 1 1/4 x 12" .2 for .05	5/8 x 1 1/2 x 8" .2 for .08

Celluloid motors, 1 1/2", 1 3/4", 2", 2 1/4", 2 1/2". Wheel pants, per pr. 24¢. Cowling, 2 1/2" diam., 17c. Rubber, 3/8" flat, 1/8" flat or 1/16 sq. ft. for 10c; 225-ft. skein, 50c. Japanese tissue (red, blue, green, orange, brown, yellow, white), sheet or 10c. Thrust bearing, 1/4" diam., gross, 12c. Washers, 1/4" diam., 10c. Bushings, 4 for 1c. Colors, Ambroid, 2 oz., 10c; pint, 50c. Clear Cement, 2 oz., pint, 69c. Insignia, sheet, 10c. Dope, 1/2 lb., 11c; pint, 69c. Lubricants, 2 oz., 10c; pint, 10c. Red, 1/2 lb., 10c; 1/2 lb., 10c. Blue, 1/2 lb., 10c. Green, 1/2 lb., 10c. White, 1/2 lb., 10c. Twin Pusher Kit, 95c.

No orders under 40c. Add 10¢ postage on orders under \$1.50; west of Mississippi, add 15¢.

LENNEN MODEL AERO CLUB  
37 Lennen Street  
Providence, R. I.

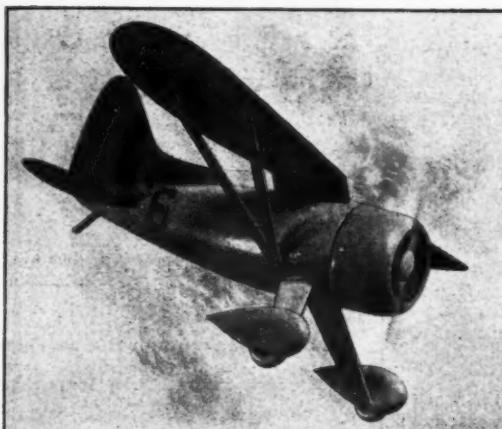
# SPRINGFIELD BULLDOG



ACTUAL PHOTOGRAPHS OF 18" WINGSPAN MODELS

**\$1 00**

Be sure to include  
15 cents extra  
for postage



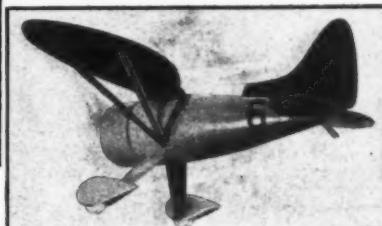
## IMPORTANT NOTICE TO MODEL BUILDERS

In response to the demand of model builders we are turning our efforts to producing a new line of models and are discontinuing our former line on January 1st. A new 18" wingspan flying scale model each month to sell for about one dollar. We shall be prepared to give three-hour service. Watch for our future advertisements.

This sensational racer, designed and flown by Robert L. Hall, co-designer of last year's winning Gee-Bee, averaged well over 200 miles per hour at the recent Cleveland air races—proclaimed by those who saw it to be the most beautiful ship ever built. It is powered with a supercharged Wasp motor and uses a controllable pitch propeller. The snappy new gull-type wing and monocoque fuselage, as well as the struts and other exposed parts, show the last word in streamlining. The ship is especially well adapted to model construction and, as can be seen from the photographs, the model retains the beautiful proportions of the real ship. This is one model beginners will not have to be afraid of. Our new easy methods of construction enable a beginner to get started on the right foot in model building. If performance counts with you model builders, we promise you that the "Bulldog" will stand "ace high" in your estimation. It is a speedy, consistent flyer, often covering distances of over 200 feet. Imagine your trim little racer roaring down the runway, zooming for altitude, its bright red wings glistening in the sunlight. Watch it race down the field for a record distance, then, with the prop slowly ticking over, settle in for a perfect three-point landing. You'll be the envy of the crowd. When your "Bulldog" is just a memory you will gauge the performance of other models by its records.

Fellows, you can't get a more complete kit for anywhere near this price (only \$1.15, including postage). All materials are of the highest grade obtainable. All balsa is "AAA," accurately sawed, and exceedingly light and strong. Kit contains glue, dope, red Ray tissue for wing and tail, fuselage material, celluloid balloon wheels, etc., etc. The blueprint is full size and detailed with many helpful instructions.

We feel sure that hundreds of wide-awake boys all over the country will be flying these models within a few weeks.

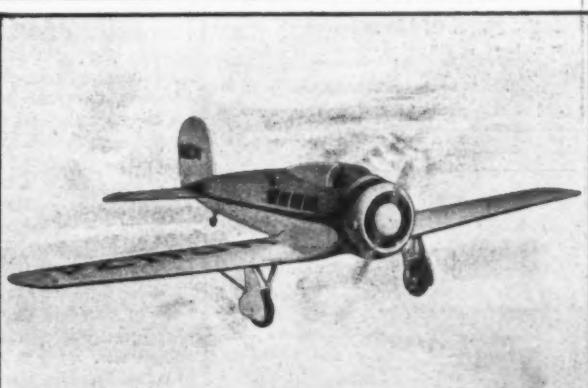


## LOCKHEED ORION

### FEATURES:

1. Prime mover
2. Spun aluminum cowl
3. Celluloid balloon wheels
4. Retractable landing gear
5. Special model color
6. Colored dopes

Fastest modern commercial plane with a high speed of 226 miles per hour. The photograph to the right shows how accurately the model has been reproduced. Due to the large wing area, the ship is a wonderful flyer. The prime mover, a patented gearless device weighing only 1/40 oz., is included in this kit. It makes use of two sets of rubber motors driving one propeller, thereby greatly increasing the performance of the model. This kit is very complete, including, besides the special features named, full-size detailed blueprint, printed folder of instructions, and plenty of grade A material.



**FALCON MODEL AIRPLANE CO.,**

9810 Division Street  
Portland, Oregon

Dealers — Write for Special Discount on Our  
New Line of Models

**CONSTRUCT-A-PLANE** — nationally known for  
**HIGH QUALITY KITS & SUPPLIES**  
offers 2 sensational flying scale models that will  
make history in the Model Airplane Field—  
models that boys will build and treasure as gifts.

**20" Flying Scale Bellanca Skyrocket**

It took months of study and planning  
to make this plane the remarkable  
model it really is. The complete kit  
includes all balsa, parts printed, plenty  
of cement and dope, plans, instruc-  
tions, and finished nose pieces.

**\$85c**

Postpaid

**Boeing P-12C—20" Flying Scale Model**

A complete kit with a liberal supply  
of everything, including cement, dopes,  
instructions, coloring, full-size plans,  
etc. You're going to build it to realize  
what a wonder it is.

**\$1.10**

Postpaid

**High Quality CONSTRUCT-A-PLANE Mod-I Supplies**  
Special 15% Discount Offer on all Supply Orders of

\$1.00 or over received before Dec. 31st

30" Sheet Balsa Thinner

1/32 x 2" . . . . . 2 for 7c 2 ozs. . . . . 8c

1/16 x 2" . . . . . 2 for 1c Thrust Bearings

1/4" x 2" . . . . . 2 for 1c .025, .035, .045 for 3c

1/8" x 2" . . . . . 7c Metal Hub

1/32" x 2" . . . . . 6c

1/16" x 3" . . . . . .045 sq. x 1/16 sq. 1/16

1/8" x 3" . . . . . .045 sq. x 1/16 sq. 1c

1/4" x 3" . . . . . .045 sq. x 1/16 sq. 2c

1/32" x 3" . . . . . 12c Reed

1/16" x 1/16" . . . . . 2 for 1c 1/16 or 1/4 dia. 5 ft. 2c

1/16" x 1/8" . . . . . 2 for 1c Music Wire

1/8" x 1/8" . . . . . 2 for 1c .014, .028, .034,

1/8" x 1/4" . . . . . 2 for 3c 5 ft. coil . . . . . 2c

2/16" x 3/16" . . . . . 2 for 3c Balsa Wheels

1/16" x 1/4" . . . . . 2 for 3c Machine Carved and

1/4" x 1/2" . . . . . 2 for 6c Polished

1/2" x 1/2" . . . . . 1c

1" x 1" . . . . . 1c 1/2" or 3/4" . . . . . pr. 4c

30" Plain Balsa 1/2" or 1" . . . . . pr. 5c

1" x 3" x 36" . . . . . 25c 1/8" pr. 7c; 1" 1/2" pr. 11c

1" x 6" x 36" . . . . . 40c Bushings

2" x 6" x 36" . . . . . 10c

Propeller Blocks

5" 1/4 x 1/4" . . . . . 3 for 2c 3 or 1/4 o.d. . . . . doz. 1c

6" 1/2 x 1/4" . . . . . 3 for 2c

7" 3/4 x 1" . . . . . 3 for 5c .045 sq. x 10 1/2" dia. . . . . 1c

8" 1 1/2 x 1" . . . . . 2 for 5c Insignia Sheets

10" 2 1/2 x 1" . . . . . 2 for 5c 23 Insignias and rudder

11" 3 1/2 x 1" . . . . . 2 for 5c stripes, 4 countries

12" 4 1/2 x 1" . . . . . 5c sheet . . . . . 1c

14" 6 1/2 x 1" . . . . . 7c Ready Cut Out Insignia

Formed Propeller Blanks

2c each extra. 5/8" or 1" pair . . . . . 1c

Jap Tissue 1/2" or 2" pair . . . . . 2c

White, 1/4" . . . . . 3 for 5c 3/4" pair . . . . . 5c

Colored tissue . . . . . 2 for 5c German Crosses

Dope, Clear or Colored 1/4" or 1/4 o.d. . . . . doz. 1c

Construct-A-Loid Cement 1/2" or 1/4" . . . . . 2c

1 oz. 6c; 2 oz. 10c

2 oz. 16c; 3 oz. 24c

3 oz. 36c; 4 oz. 48c

4 oz. 56c; 5 oz. 64c

5 oz. 72c; 6 oz. 80c

7 oz. 88c; 8 oz. 96c

8 oz. 104c; 9 oz. 112c

9 oz. 120c; 10 oz. 128c

11 oz. 136c; 12 oz. 144c

13 oz. 152c; 14 oz. 160c

15 oz. 176c; 16 oz. 184c

17 oz. 192c; 18 oz. 200c

19 oz. 208c; 20 oz. 216c

21 oz. 224c; 22 oz. 232c

23 oz. 240c; 24 oz. 248c

25 oz. 256c; 26 oz. 264c

27 oz. 272c; 28 oz. 280c

29 oz. 288c; 30 oz. 296c

31 oz. 304c; 32 oz. 312c

33 oz. 320c; 34 oz. 328c

35 oz. 336c; 36 oz. 344c

37 oz. 352c; 38 oz. 360c

39 oz. 368c; 40 oz. 376c

41 oz. 384c; 42 oz. 392c

43 oz. 400c; 44 oz. 408c

45 oz. 416c; 46 oz. 424c

47 oz. 432c; 48 oz. 440c

49 oz. 448c; 50 oz. 456c

51 oz. 464c; 52 oz. 472c

53 oz. 480c; 54 oz. 488c

55 oz. 496c; 56 oz. 504c

57 oz. 512c; 58 oz. 520c

59 oz. 528c; 60 oz. 536c

61 oz. 544c; 62 oz. 552c

63 oz. 556c; 64 oz. 564c

65 oz. 568c; 66 oz. 576c

67 oz. 580c; 68 oz. 588c

69 oz. 584c; 70 oz. 592c

71 oz. 596c; 72 oz. 604c

73 oz. 608c; 74 oz. 616c

75 oz. 612c; 76 oz. 620c

77 oz. 624c; 78 oz. 632c

79 oz. 636c; 80 oz. 644c

81 oz. 648c; 82 oz. 656c

83 oz. 660c; 84 oz. 668c

85 oz. 672c; 86 oz. 680c

87 oz. 684c; 88 oz. 692c

89 oz. 696c; 90 oz. 704c

91 oz. 708c; 92 oz. 716c

93 oz. 720c; 94 oz. 728c

95 oz. 732c; 96 oz. 740c

97 oz. 744c; 98 oz. 752c

99 oz. 756c; 100 oz. 764c

101 oz. 768c; 102 oz. 776c

103 oz. 780c; 104 oz. 788c

105 oz. 792c; 106 oz. 796c

107 oz. 800c; 108 oz. 808c

109 oz. 812c; 110 oz. 820c

111 oz. 824c; 112 oz. 832c

113 oz. 836c; 114 oz. 844c

115 oz. 848c; 116 oz. 856c

117 oz. 860c; 118 oz. 868c

119 oz. 872c; 120 oz. 880c

121 oz. 884c; 122 oz. 892c

123 oz. 896c; 124 oz. 904c

125 oz. 908c; 126 oz. 916c

127 oz. 920c; 128 oz. 928c

129 oz. 932c; 130 oz. 940c

131 oz. 944c; 132 oz. 952c

133 oz. 956c; 134 oz. 964c

135 oz. 968c; 136 oz. 976c

137 oz. 980c; 138 oz. 988c

139 oz. 992c; 140 oz. 1000c

141 oz. 1004c; 142 oz. 1012c

143 oz. 1016c; 144 oz. 1024c

145 oz. 1028c; 146 oz. 1036c

147 oz. 1040c; 148 oz. 1048c

149 oz. 1052c; 150 oz. 1060c

151 oz. 1064c; 152 oz. 1072c

153 oz. 1076c; 154 oz. 1084c

155 oz. 1088c; 156 oz. 1096c

157 oz. 1098c; 158 oz. 1106c

159 oz. 1108c; 160 oz. 1116c

161 oz. 1118c; 162 oz. 1126c

163 oz. 1128c; 164 oz. 1136c

165 oz. 1138c; 166 oz. 1146c

167 oz. 1148c; 168 oz. 1156c

169 oz. 1158c; 170 oz. 1166c

171 oz. 1168c; 172 oz. 1176c

173 oz. 1178c; 174 oz. 1186c

175 oz. 1188c; 176 oz. 1196c

177 oz. 1198c; 178 oz. 1206c

179 oz. 1208c; 180 oz. 1216c

181 oz. 1218c; 182 oz. 1226c

183 oz. 1228c; 184 oz. 1236c

185 oz. 1238c; 186 oz. 1246c

187 oz. 1248c; 188 oz. 1256c

189 oz. 1258c; 190 oz. 1266c

191 oz. 1268c; 192 oz. 1276c

193 oz. 1278c; 194 oz. 1286c

195 oz. 1288c; 196 oz. 1296c

197 oz. 1298c; 198 oz. 1306c

199 oz. 1308c; 200 oz. 1316c

201 oz. 1318c; 202 oz. 1326c

203 oz. 1328c; 204 oz. 1336c

205 oz. 1338c; 206 oz. 1346c

207 oz. 1348c; 208 oz. 1356c

209 oz. 1358c; 210 oz. 1366c

211 oz. 1368c; 212 oz. 1376c

213 oz. 1378c; 214 oz. 1386c

215 oz. 1388c; 216 oz. 1396c

217 oz. 1398c; 218 oz. 1406c

219 oz. 1408c; 220 oz. 1416c

221 oz. 1418c; 222 oz. 1426c

223 oz. 1428c; 224 oz. 1436c

225 oz. 1438c; 226 oz. 1446c

227 oz. 1448c; 228 oz. 1456c

229 oz. 1458c; 230 oz. 1466c

231 oz. 1468c; 232 oz. 1476c

233 oz. 1478c; 234 oz. 1486c

235 oz. 1488c; 236 oz. 1496c

237 oz. 1498c; 238 oz. 1506c

239 oz. 1508c; 240 oz. 1516c

241 oz. 1518c; 242 oz. 1526c

243 oz. 1528c; 244 oz. 1536c

245 oz. 1538c; 246 oz. 1546c

247 oz. 1548c; 248 oz. 1556c

249 oz. 1558c; 250 oz. 1566c

251 oz. 1568c; 252 oz. 1576c

253 oz. 1578c; 254 oz. 1586c

255 oz. 1588c; 256 oz. 1596c

257 oz. 1598c; 258 oz. 1606c

259 oz. 1608c; 260 oz. 1616c

261 oz. 1618c; 262 oz. 1626c

263 oz. 1628c; 264 oz. 1636c

265 oz. 1638c; 266 oz. 1646c

267 oz. 1648c; 268 oz. 1656c

269 oz. 1658c; 270 oz. 1666c

271 oz. 1668c; 272 oz. 1676c

273 oz. 1678c; 274 oz. 1686c

275 oz. 1688c; 276 oz. 1696c

277 oz. 1698c; 278 oz. 1706c

279 oz. 1708c; 280 oz. 1716c

281 oz. 1718c; 282 oz. 1726c

283 oz. 1728c; 284 oz. 1736c

285 oz. 1738c; 286 oz. 1746c

287 oz. 1748c; 288 oz. 1756c

289 oz. 1758c; 290 oz. 1766c

291 oz. 1768c; 292 oz. 1776c

293 oz. 1778c; 294 oz. 1786c

295 oz. 1788c; 296 oz. 1796c

297 oz. 1798c; 298 oz. 1806c

299 oz. 1808c; 300 oz. 1816c

301 oz. 1818c; 302 oz. 1826c

303 oz. 1828c; 304 oz. 1836c

305 oz. 1838c; 306 oz. 1846c

307 oz. 1848c; 308 oz. 1856c

309 oz. 1858c; 310 oz. 1866c

311 oz. 1868c; 312 oz. 1876c

313 oz. 1878c; 314 oz. 1886c

315 oz. 1888c; 316 oz. 1896c

317 oz. 1898c; 318 oz. 1906c

319 oz. 1908c; 320 oz. 1916c

321 oz. 1918c; 322 oz. 1926c

323 oz. 1928c; 324 oz. 1936c

325 oz. 1938c; 326 oz. 1946c

327 oz. 1948c; 328 oz. 1956c

329 oz. 1958c; 330 oz. 1966c

331 oz. 1968c; 332 oz. 1976c

333 oz. 1978c; 334 oz. 1986c

335 oz. 1988c; 336 oz. 1996c

337 oz. 1998c; 338 oz. 2006c

339 oz. 2008c; 340 oz. 2016c

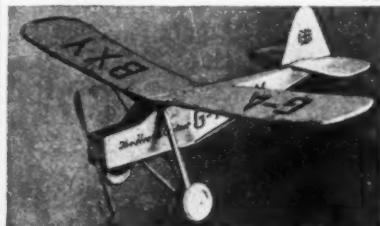
# Build These RIPIN-DESIGNED



**Curtiss F9C2  
AKRON**

The pursuit plane carried in the "Akron"—a snappy model that looks and flies well. 12" wingspan.

99c p.p.



**Mollison's  
PUSS MOTH**

Lifelike model of the new Transocean plane—selected by men and boys everywhere. 14" wingspan.

99c p.p.



**Thompson Trophy  
GEE-BEE**

Doolittle's record-breaking entry at the National March Air Parade. 14" replies of the Super-Sportster.

99c p.p.



**Jimmy Haizlip's  
Wedell Williams**

Winner of the Transcontinental record. A faithfully reproduced model of the famous ship. See it fly! 14" wingspan.

99c p.p.

## These Authentic RIPIN-DESIGNED Flying Scale Models

—are bringing endless thrills to air-minded boys and men everywhere, not only because of the simplicity of design and ease of construction, but also their flying qualities and accuracy. And boy!—what value! No model airplane manufacturer could possibly give more value in a kit than we have with these startling Ripin-Designed winners.

**E**VERY Ripin kit is complete to the last detail. As a matter of fact, we actually include more material than the models really require. All-balsa for these flying models is already stamped ready to cut out, simplifying the work for you. All other essential materials include cement, dope, tissue, rubber motor, wire parts, propeller block, wheels, insignia, etc.,—everything required to build perfect flying models from the full-size plans and detailed instructions which accompany each Ripin kit. And all parts are of the finest quality, too.

The illustrations at the left barely convey the real beauty and lifelike appearance of these Ripin-Designed flying scale models. In every instance they resemble the original ships closer than anything we have ever seen. And you, too, must see them to appreciate their quality, airworthiness and value!

## SCALE MODELS

Designed by  
Robert B. Ripin,  
Engineer M. I. T.

for Greater Accuracy,  
Performance and  
Enjoyment ~ ~ ~

## These 10-Inch RIPIN-DESIGNED Solid Scale Models

—are wonderful for gifts, and fine for your club meeting-room or den.



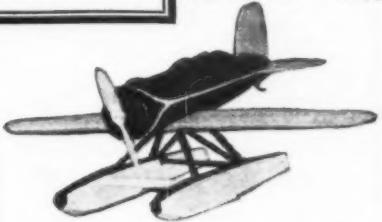
**Post and Gatty's  
Round-the-World  
Lockheed  
Vega**

A true reproduction of that famous globe-circling ship—similar to the plane used by Amelia Earhart in her epoch-making transatlantic solo flight. A most complete kit with finished prop. wings, stabilizers, rudder, accurately ready-formed fuselage with cockpit drilled, wheels, and semi-finished parts, blueprints, glue, etc. 99c p.p.

Any Kit ~

**99¢  
Each**

**POSTPAID**



**Colonel  
Lindbergh's  
Lockheed Sirius**

A solid replica of a famous ship, popularized by the world-famous flyer, and we're proud of this model, too. It may be had in 2 types: the seaplane with finished pontoons or the land plane with semi-finished pants and finished wheels. Each kit contains: semi-finished prop., wings, stabilizers, rudder, turned fuselage with cockpit already drilled, full-size blueprint, glue and everything else required to complete the models. (When ordering state which type is desired.) Each kit, 99c p.p.

**What a  
Flyer!**

**The New 13-Inch "FLASH"!**

**Assembled  
in a Jiffy!**

**Only**

**50¢**

**POSTPAID**

**It's a WOW!**

In this new Ripin FLASH we are giving boys what they have been wanting for some time. The all-balsa fuselage is printed on thin sheet balsa and all you have to do is to cut out the parts and glue them together. It takes off from the ground with a W-H-I-Z-Z and makes a perfect 3-point landing. It's sturdy, too. What flights! See how many records you can pile up with this Ripin FLASH. It's a swell Xmas gift for any boy. Order a few today.

Order your Ripin-Designed kits TODAY and have them completed by Xmas. Orders shipped at once, but we advise you to get your orders in early so as to avoid the possible delays caused by heavy last-minute mails. Remit by check or money order. Add 15% to Foreign orders for packing and extra postage.

**RIPIN MODEL AIRPLANE CO.  
915 Franklin Ave.  
Brooklyn N.Y.  
Dept. N.  
12**

**The Lowest Prices Ever Offered on  
Selley's Model Supplies!**

Spun  
Alumi-  
num  
Cowls



Diameter	Anti-Drag	Open Cowl	Closed Cowl
1 1/8"	.20	.20	.20
2"	.25	.25	.25
2 1/8"	.28	.30	.30
2 1/2"	.30	.35	.35
3 1/8"	.40	.45	.45
3 1/2"	.50	.55	.55

Cowls can be had in  $\frac{1}{8}$ " graduations up to  $\frac{1}{2}$ ", then in inch up to  $\frac{1}{2}$ " dia. Packing and Postage, 6¢ each.

## PROPELLERS

CAST METAL

SPINNER TYPE

STANDARD STEEL TYPE

2 BLADED	3 BLADED	2 BLADED	3 BLADED
3 1/4"	.25	.34"	.20
4"	.30	.35	.30
4 1/4"	.35	.40"	.35
5"	.35	.45"	.35
5 1/4"	.40	.50"	.40
5 1/2"	.40	.50"	.40
6 1/4"	.40	.65"	.45
7 1/4"	.55	.70"	.50

Props can be had 8", 9", 10", 11", 12", 13", 14", 21" and 24". Postage 6¢ each up to 12" dia. Shaft and Bushing 10¢ extra.

## Now-Selley Wheels Cost Less!

The largest and lowest-priced selection in the world

Alum. Disc Rub. Tired Tall Wheel	Alum. Disc Rub. Tired Low Wheel	Celluloid Rubber Tired Air Wheels	Celluloid Untired Air Wheels
1 1/2" dia... 5¢ ea.	1 1/2" dia... 6¢ ea.	1 1/2" dia... 18¢ pr.	1 1/2" dia... 6¢ pr.
2" dia... 7¢ ea.	2" dia... 8¢ ea.	2" dia... 20¢ pr.	2" dia... 10¢ pr.
2 1/2" dia... 10¢ ea.	2 1/2" dia... 12¢ ea.	2 1/2" dia... 25¢ pr.	2 1/2" dia... 15¢ pr.
3" dia... 12¢ ea.	3" dia... 14¢ ea.	3" dia... 35¢ pr.	3" dia... 20¢ pr.
3 1/2" dia... 15¢ ea.	3 1/2" dia... 18¢ ea.	3 1/2" dia... 50¢ pr.	3 1/2" dia... 35¢ pr.
4" dia... 18¢ ea.	4" dia... 22¢ ea.	4" dia... 60¢ pr.	4" dia... 45¢ pr.
4 1/2" dia... 20¢ ea.	4 1/2" dia... 25¢ ea.	4 1/2" dia... 80¢ pr.	4 1/2" dia... 60¢ pr.
5" dia... 25¢ ea.	5" dia... 30¢ ea.	5" dia... 100¢ pr.	5" dia... 75¢ pr.
5 1/2" dia... 30¢ ea.	5 1/2" dia... 35¢ ea.	5 1/2" dia... 125¢ pr.	5 1/2" dia... 90¢ pr.
6" dia... 35¢ ea.	6" dia... 40¢ ea.	6" dia... 150¢ pr.	6" dia... 105¢ pr.
6 1/2" dia... 40¢ ea.	6 1/2" dia... 45¢ ea.	6 1/2" dia... 175¢ pr.	6 1/2" dia... 120¢ pr.

Postage on Rubber Tired Wheels 4¢; Untired, 3¢ pr.

Send 10¢ for catalog listing 1000 items

You can buy with Confidence from Selley

**SELLY** MANUFACTURING CO., INC.,  
1373A Gates Av., Brooklyn, N. Y.

EVERY ADVERTISER

in

Universal Model Airplane News  
Is Trustworthy

## MODEL AIRPLANES

Stronger and Lighter



JAPANESE and ENGLISH TISSUE  
PAPERS in an excellent variety of Colors.  
Plain and Colored WOOD  
VENEER PAPER

Send for Samples and Prices

**JAPAN PAPER COMPANY**  
109 East 31st St., NEW YORK CITY

## Human Cannonballs

(Continued from page 38)

plane ahead. What a relief! He again can resume a normal state of mind as he eases the controls forward to gather a few knots speed on the safe side of a stall.

IT is entirely possible to launch model airplanes by means of a small catapult. It must not be forgotten that Professor S. P. Langley sent his steam-driven models into the air by means of a spring catapult mounted on a houseboat anchored in the Potomac River. On page number eight are plans for such a catapult that will prove interesting and satisfactory.

## Major James McCudden

(Continued from page 9)

German ships. No field was too large to cover nor hardly a day too severe for him to launch his ship in quest of game.

It happened that very few Germans seemed to be aloft the particular day that McCudden had one of his rare experiences. At least the English officer failed to see any signs of them as he drove deeper and deeper over the enemy soil. Finally, far off to his left he perceived what seemed like heavy troop movements. It might, perhaps, be a new concentration of enemy forces and, if so, worth investigating. Those things were usually the inaugural of a new line of hostilities. The Allied General Command would like to know more about this, reasoned McCudden as he turned toward the scene to make a more detailed observation. Indeed, there was something going on. Masses of infantry were pouring into the spot by train, motor and on foot.

On the ground below him, passing in swift flight over the active countryside was the shadow of his own ship. As McCudden's eyes fastened on the ground a moment to gauge the length of a munition train rolling to a halt below him, he saw additional shadows trailing along behind him.

There was not a moment to lose and McCudden did not hesitate. To be attacked from the rear was almost fatal. Better that he should be the attacker, even against those odds. Such a man was this Britisher. He immediately nosed into a loop so sharp and swift that it seemed as if his sturdy little ship would be torn to pieces by the strain. But he came around all right, himself now in back of the foe. Straight at them he flew with guns open and working madly.

ROUND after round of shot poured into the carcass of the nearest German ship and it withered and crumpled under the grueling fire. It fell so fast that, with guns still streaming steel, McCudden passed right over its flaming hulk. Before he was even aware of what he was doing, his machine guns had found another living target. By some strange trick, two of the Germans had been directly in McCudden's line of fire. As the first one fell, the second reaped all the benefit of the devastating shock.

So a brace of Boches were already dispatched where but one had been his object. The lone Ally, much encouraged by this "break" in luck, went into immediate attack upon the third.

(Continued on page 44)



TRUE SCALE ORNAMENTAL MODELS

FINE detailed, 20" authentic miniature reproductions of the GEE-BEE SUPER-SPORTSTER, CURTISS HAWK P-6-E, and FALCON AC-3. Each an art-piece of rare beauty and distinction. Send for free catalog.

### COMPLETELY FINISHED MODEL CONSTRUCTION KITS

KITS AND DRAWINGS ARE NOW AVAILABLE.

Send 10¢ for an actual photographic print, description, and price of finished models.

**CONSTRUCTION KITS.** containing a most complete and unusually large list of material necessary for the construction of these fine grade models (finished nose block, radial engine, and cowl included in the Gee-Bee kit),

including full-size, three-view drawing, pattern layout and instructions, are being offered at special introductory price of 35¢ each: Gee-Bee, \$3.50 each; Hawk P-6-E kit, \$3.50 each; Falcon AC-3 kit, \$3.25 each. Postage, 30¢ per kit.

Detailed three-view drawing, full size, 50¢ each.

Pattern Layout, 50¢ each, postage.

Pictures above are actual photographs of finished models.

Remit by Check or Money Order

C.O.D. orders not accepted

VICTOR STANZEL, Schulenburg, Texas

## MIDGET MODELS

**MIDGET HYDROPLANE.** 9" wing spread. The plane is balanced on two 5" pontoons. Easy to build and makes long straight flights. Kit, postage ..... \$ .50

**MIDGET R. O. G. 6" wing spread, 4" motor stick. An easily built little plane that will fly 25 or 30 feet. Kit, postage ..... \$ .50**

**HEATH BABY BULLET.** 9" wing spread. An easily built model-looking model that also flies well. A very realistic model of this famous plane. Kit, postage ..... \$ .50

ALL 3 KITS ABOVE SENT POSTPAID FOR \$1.25

**CABINAIRE.** A very popular cabin model with a 24" wing span and an endurance of 1 1/2 to 2 minutes. It will rise off the ground. Kit, postage ..... \$ .50

**WHEELS.** Light weight sponge rubber, pneumatic tires on aluminum disc wheels. 1 1/2" or 1 1/4" dia. pair \$ .25

**DOWN-TURN AIRWHEELS.** Just like real airplane wheels. Large over-size tire with a tiny hub. 1" dia. pair \$ .30

**BALLOON TIRES.** 1 1/2" dia. pair, \$ .25; 1 1/4" dia. pair, \$ .30.

**ALUMINUM WHEELS.** They look like and are as light as celluloid wheels. They are drilled for an axle and are stronger and better than celluloid wheels. 1" dia. pair ..... \$ .09

**JAPANESE TISSUE.** Grade A. sheets 20 1/2" x 24 1/2". White

14 sheets, \$ .25; red, orange, blue, green or brown 12 sheets, \$ .25. Mixed package 2 sheets of each color above (12 sheets) \$ .25.

## FREE PRICE LIST

Send two 1c stamps to cover postage on our new low price list.

THE MODEL AERO SHOP, Bay Crest, Huntington, N. Y.

## ADVERTISED MODELS ARE ALWAYS BEST

When you buy a model or model supplies from an advertisement in UNIVERSAL MODEL AIRPLANE NEWS you know automatically that you are doing business with a large, well-established, trustworthy concern. Model airplane companies advertising in this magazine are anxious to please you! Order from them with confidence.

Original



Balsa Wood



## WONDER STRIPPER

OH! BOY—Here's Good News

Imagine cutting up all your fine strips, wing spans, bamboo, etc., 1/32" to 3/4" wide smooth, perfect sticks as you need them—quickly and accurately. No waste. The "Wonder Stripper" (patent applied for) will do this for you. Made of polished metal mounted on wood base. Adjustable gauge, removable razor, tension clip holds balsa down. Most essential tool ever devised for model builders.

Price

50¢

Postpaid

Order the original "WONDER STRIPPER" now—and strip up your balsa on "the smallest bench saw in the world."

Satisfaction Guaranteed (Agents Wanted)

BROADFIELD AERO MODEL BUILDERS

Box 116-B, Hempstead, L. I., N. Y.

# --if you demand **QUALITY! SERVICE!**

**then Universal is the place to buy!**

Universal kits and supplies are guaranteed to be of the finest quality obtainable. Service and quality is assured and most important of all . . . .

## GIVEN!

500 Ft.  
Finest Fresh  
**PARA  
RUBBER**

WITH EVERY \$2.50 SUPPLY ORDER  
(Not Including Postage)  
(This Offer Does Not Include Kits)

### BALSA WOOD

This balsa is the lightest and strongest known—kiln-dried and free from defects.  
(If 36" lengths are desired just double 18" price and add 10¢ extra postage to order.)

#### 18" BALSA STRIPS

1/32" x 1/16" .25 for .05	1/8" x 2" .6 for 10
1/16" x 1/16" .25 for .05	3/16" x 2" .4 for 10
1/16" x 3/32" .25 for .05	1/2" x 2" .2 for 11
1/16" x 1/8" .22 for .05	1/2" x 2" .2 for 12
1/16" x 1/4" .17 for .05	1/16" x 3" .7 for 20
3/32" x 3/32" .21 for .05	3/32" x 3" .6 for 20
1/8" x 1/8" .20 for .05	1/8" x 3" .5 for 20
1/8" x 3/16" .14 for .05	1/16" x 3" .3 for 22
1/8" x 1/4" .10 for .05	1/2" x 3" .3 for 22
1/8" x 1/2" .8 for .05	1/2" x 3" .3 for 24

#### BALSA PROPELLER BLOCKS

5/8" x 1/2" x 5/8" .9 for .05
5/8" x 1/2" x 5/8" .7 for .05
5/8" x 1/2" x 5/8" .5 for .05
5/8" x 1/2" x 5/8" .3 for .05
5/8" x 1/2" x 5/8" .1 for .05

#### BAMBOO

1/16" sq. x 10 1/2"
24" for .05
1/16" x 1/4" x 15"
Each .01
1/16" x 1/4" x 15"
Dozen .08

#### COLORED DOPe

White, yellow, orange, red, green, olive drab, blue, black, silver, gold.
1/2 oz. .05
1 pint (16 oz.) .10
1 quart (32 oz.) .20
1 quart (32 oz.) .00

#### CLEAR DOPe

1/2 oz. .04
1 oz. .07
4 oz. .13
1 pint (16 oz.) .45
1 quart (32 oz.) .75

#### FLANGED BUSHINGS

Useful for wheels, propeller bushings or for exhaust pipes.
Doz. .05
1/16 diam. x 5/32" .05
1/16 diam. x 5/32" .08
3/32 diam. x 1/4" .08
1/8 diam. x 1/2" .10
1/4 diam. x 3/16" .15

#### FOOT REST

3/16 x 1/4 gr. .10
--------------------

Model Plans 10¢ Each

Boeing P-12B, Gee Bee, Laird Super, Hell Diver, P-6E, Bellanca, Stinson, Lockheed Orion, Vega, Travelair, Super Marine, Sopwith Camel, Gloster IV, S.E.5, Tiger Moth, Avro 504K, Sleighter, Bernard, Ansaldo, Fokker Triplane, Albatross, Pfalz, Fokker D8, Polish Fighter. EACH PLAN 10¢—FOR 25¢, POSTPAID.

18" BALSA SHEETS

1/64" x 2" .5 for .10

1/32" x 2" .7 for .10

1/16" x 2" .7 for .10

**ALL UNIVERSAL  
SUPPLIES and KITS  
are sold on a  
MONEY-BACK  
GUARANTEE BASIS**  
If you are not entirely satisfied

### 12" MIDGET TWIN PUSHER KIT

Complete with all  
materials, plans  
and instructions

**25¢**  
Postpaid

#### \*SEMI-FINISHED WHEEL PANTS

Per Set	.....	.05
For 5/8" or 1/2" Wh.	.15	
For 1" Wh.	.20	
For 1 1/2" Wh.	.25	
For 1 3/4" Wh.	.30	
For 2" Wh.	.35	
For 2 1/2" Wh.	.35	

#### SANDPAPER

Per package ..... .05

#### INSIGNIAS

24 different ..... .10

#### WASHERS

1/8 O.D. Per doz. .01

Per gross .10

1/4 O.D. Per doz. .01

Per gross .10

#### \*DOUGHNUT RUBBER AIR WHEELS

1" dia. pair	.18
1 1/4" dia. pair	.20
1 1/2" dia. pair	.25

#### \*ALUMINUM LEAF

(.0003 of an inch in thickness, 3/4" wide)  
5 feet for ..... .05

#### GENUINE SUPER-FINE TISSUE

Cover your Champion endurance ships with this tissue. 18" x 24".

Per sheet ..... .07

Per dozen ..... .75

#### WOOD VENEER

For scale model work.  
20" x 30" per sheet .20

20" x 15" per sheet .12

#### \*RUBBER-TIRED DISC WHEELS

Adds realism to your model.

3/8" dia. .... .05 each

1/2" dia. .... .06 each

5/8" dia. .... .08 each

#### CELLULOID PANTS

For 3/4" or 1" Wheel .14

For 1 1/2", 1 3/4" Wheel .28

#### SHEET CELLULOID transparent

3/8" x 5" ..... .05

6" x 10" ..... .10

#### \*DUMMY MACHINE GUNS

Pursuit Type Gun .10

Swivel Type Gun .10

#### \*ALUMINUM COWLING

Anti-Drift Open Closed

1" ..... .18

1 1/2" ..... .20

2" ..... .25

2 1/2" ..... .35

3" ..... .38

3 1/2" ..... .35

#### N.A.C.A. CELLULOID COWLING

2 1/4" dia. ..... .20

2 3/4" dia. ..... .22

#### \*PROPELLERS DIE CAST

Standard Steel Type

dia. ..... .20

2 3/4" dia. ..... .22

3 1/4" dia. ..... .23

9" dia. ..... .40

#### FINEST PARA RUBBER

1/2" x 1/32 30 ft. .95

.045 square 20 ft. .95

22 ft. skein ..... .40

22 ft. flat ..... .95

22 ft. skein ..... .95

3/16 flat 12 ft. .... .95

22 ft. skein ..... .80

#### \*PROPELLERS DIE CAST

Three Bladed

Die Cast

Standard Steel Type

1 1/2" ..... .25

2" ..... .30

1 1/2" (4 bladed) .. .35

#### MUSIC WIRE (straightened)

.014, .020, .028, .034

6 feet ..... .03

#### THRUST BEARINGS (small or large)

Each ..... .01 1/2

Per dozen ..... .15

#### MODEL PINS

Per package ..... .05

Dealers! Clubs! Write for confidential wholesale price list

No supply orders under 50¢. Add 15¢ for packing and postage to orders under \$1.50. Orders over \$1.50 add 10¢ extra. When ordering 36" lengths add extra 10¢. Canada 10¢ extra. (Add 10¢ extra to cover postage on Free Rubber.)

B

Dealers! Clubs! Write for confidential wholesale price list

B

**UNIVERSAL MODEL AIRPLANES**  
1654 St. Johns Place, Brooklyn, New York, (Dept. N-12)



## Advisory Board

(Continued from page 40)

because the effective wing area (horizontal projection of the wing) is reduced. Between 5 and 10 per cent wing efficiency will be lost with a dihedral angle of about 10 degrees.

**Question.** Is the weight of wings calculated in the amount of lift required?

**Answer.** The wings are a part of the machine. The total machine must be lifted from the ground. Therefore, the weight of the wings is calculated in the amount of lift required to lift the plane.

**BILL HILL** of 169 Church Street, Sault Ste. Marie, Ontario, wants to know the answers to the following questions:

**Question.** I have built a model with a fuselage 11" long and prefer to use wings of about 16" in span. What chord should I use?

**Answer.** The chord should be no greater than 2.7" nor less than 1.6". I would suggest a chord of 2 3/8".

**Question.** What area would you advise me to make the tail plane?

**Answer.** I would make the area of the tail plane between 14 and 15 square inches.

Ralph A. Johnson of Box 525, Prince Rupert, B. C., wants the answers to several questions:

**Question.** When covering the wings of my airplane with paper, should one or two pieces be used for each wing or a number

of strips, and where should the covering begin and end?

**Answer.** It is best to cover half the wing at a time with one strip of paper, beginning at the root or center of the total span of the wing and working outward toward the tip. Personally, I prefer to cover the top surface first and the lower surface last. If the wing is rounded at the tips and has ribs at this point, with a cross-section which is not similar or which is of lower camber than the rest of the ribs, small strips of paper should be used at this point.

Happy landings until next month.

## Major James McCudden

(Continued from page 44)

tion behind the lumbering Albatross, it was but a moment's work to deliver the coup de grâce. A few well-directed bursts from his Lewis gun and the German ship was a floundering hulk, trailing crazily from the sky as it wrote its own obituary in smoke.

Thus the fifty-eight victories that McCudden had won were earned in most diversified ways. Before the end he had been bestowed upon him the Distinguished Service Order, a bar to the same; the Croix de Guerre; the Military Cross, a bar to the M. C.; and the Military Medal.

To top these off, England gave him, James Byford McCudden, who had entered the ranks at 15 in the lowly capacity of

bugler, its greatest reward in recognition of his valor, the Victoria Cross. The citation that accompanied this great award sums up most clearly the true character of the man McCudden and his value to the cause for which he gave his life.

It read: "As a patrol leader he has shown at all times the utmost gallantry and skill, not only in the manner in which he has attacked and destroyed the enemy but in the way he has, during many flights, protected the newer members of his flight, thus keeping their casualties down to a minimum."

## Air-Ways

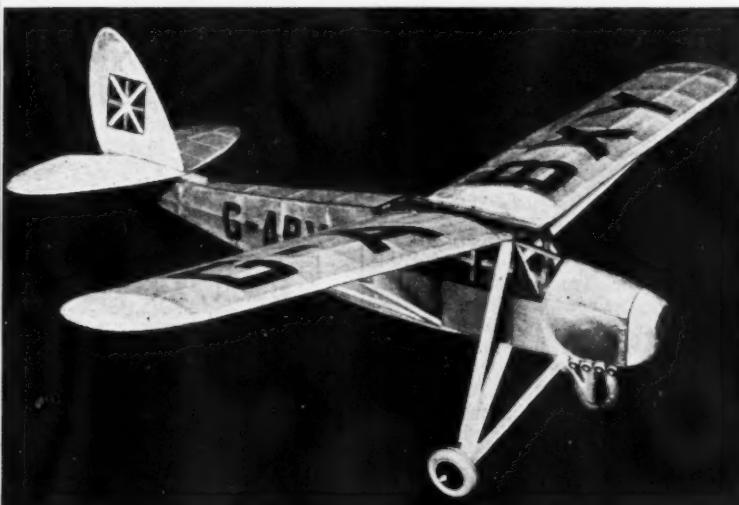
(Continued from page 21)

the meet is shown seated, evidently groggy from a wild ride.

Recently we received a very interesting letter from Lawrence S. McCready of 1027 Grant Avenue, Pelham Manor, N. Y. In order that you may know exactly what he has to say, we are publishing his letter as follows:

"I am a model builder of some 7 years' experience, and I am very much interested in the game. I am also interested in photography. Here's where the two come in together. I know that model builders like close-up photographs of their models, but the Kodak or Brownie camera which the average model builder possesses will not focus much under 5 or 6 feet, and a small model at that distance comes out very small indeed in the finished picture. Having a few small solid scale models of which I wanted

## CRESCENT'S New Flying Scale PUSS MOTH won 1st Prize at National Aviation Reserve contest and will win you over too!



Free Demonstration of all Crescent Models listed below at Buyers, Clubs, Schools, and Dealers.

22" Curtiss Fledgling flying scale model—kit	\$1.95 P.P.
18" Curtiss Hell Diver flying scale model—kit	2.10 P.P.
17" Curtiss Falcon flying scale model—kit	1.50 P.P.
27" Endurance model kit one-mile flyer—kit	1.25 P.P.
27" Flying Glory commercial model—kit	1.95 P.P.
24" Cabinaire Jr. 2000-ft. flyer commercial model—kit	1.00 P.P.

The picture at the left is an unretouched photograph of our flying Puss Moth. This model should not be confused with any other on the market. You can easily get one minute endurance or more from this very accurate reproduction of the famous British light plane. Wing span 26", total weight 1 1/2 ounces. The model is a beautiful cabin job with its gull-like wings (a cinch to build, using our method).

Our construction kit, with super-detailed drawing, makes the model very simple to build. All parts requiring carving or shaping are finished for you (8" prop perfectly balanced and ready to attach), stamped ribs, cowling ready carved, nose piece cut to size and marked, celluloid wheels, etc.

**Construction Kit.** \$1.50 Post-paid

## Curtiss A8 Attack



12" Solid Scale Model of the famous new U. S. Army war plane. Special metal 3-bladed prop. Ready to attach aluminum disk wheels, 3 separate color paints. Kit contains fuselage, all marked, both sides for carving and shaping.

Complete Kit . . . . . 95¢ P.P.

Flying 24" Scale Model  
New kind of construction makes this model easy to build, sturdy, and a great flyer. Average flights of 300 feet. Full-size plans, difficult parts finished for you.

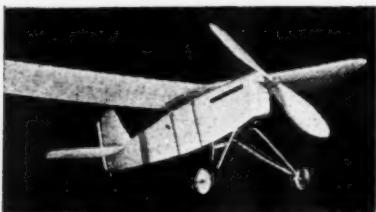
Complete Kit . . . . . \$2.98 P.P.

P.O. Box 319  
**Crescent Model Aircraft Co., Grand Central Annex, New York, N.Y.**

# HERE'S NEWS

## C. C. SPORTSTER

with Automatic Parachute Release



37" Wing Span

Last year we offered the C. C. Flying Fool, the FIRST five-foot model equipped with three geared electric motors. These planes have won second division record after record and "out of sight" flights are no longer uncommon.

Pictured above is the C. C. Sportster, winner of first place in the Kansas City Novelty Maneuvering Contest. This is the FIRST miniature airplane equipped with automatic parachute release ever offered the model builders of America.

The Sportster takes off quickly and climbs rapidly to a height of over two hundred feet. Suddenly the pilot balls out and comes floating gently down to earth under an 18-inch silk parachute while the plane glides in to a perfect three-point landing. Thrills—plenty of them! This plane creates a sensation wherever it flies. Why not be the FIRST?

Country Club Kits are complete and all assembly guess-work is eliminated. Here's what your kit contains: Large 37" x 24" easily understood blueprint, all-balsa parts required for the built-up fuselage, adjustable wing and tail surfaces, including 1/32" balsa slabs for fuselage sides, 15" with parabolic curve; dummy fuel pipe, 1/8" x 6" Mino silk tissue, 12" high pitch propeller with spinner and prop shaft, parachute release feature, shock absorbing landing gear equipped with 3" celluloid wheels, rubber motor, dummy exhaust pipes, 2-ounce can C.C. Dope, 1 tube C.C. Woodwoeld, rubber tubing, thread, etc., etc. There is no cost for you to buy and the price of this sensational 3-foot flying model is only \$1.75 delivered to your hangar if you live in the U.S.A., or \$2.20 in Canada.

Blueprint only—40¢

Large 6" tube C.C. Woodwoeld—25¢

Our new 1933 catalog is just out. If you haven't received yours, you are missing something. It will be sent you for 5¢ or is furnished free with a 25¢ order.

**COUNTRY CLUB AERO SUPPLY CO.**  
Mail Order Dept., 5821 Holmes St., Kansas City, Mo.  
Four Retail Stores in Greater Kansas City  
"Where your dollar has more cents!"

## 25c in CASH

is given to each UNIVERSAL MODEL AIRPLANE NEWS subscriber who sends us a friend's new subscription. Subscribe to UNIVERSAL MODEL AIRPLANE NEWS yourself first, then earn 25¢ for each new subscription you send in. Silver Wings Pin with each new subscription you get. No red tape, just send each subscription you get with \$1.00 to E. Desner, Universal Model Airplane News, 125 W. 45th St., New York City, and you'll receive the 25¢ in cash by return mail.

## JUST OUT

### 22-INCH Flying Model

High  
Altitude  
Long  
Distance  
Model



### HI- FLYER

Here's a new thrill for Model Airplane Builders. The 22-inch Wing-Spread HI-FLYER is easy to build, but gives an amazing performance. Takes off with a 3-foot run—then soars way up for many feet—flies a long distance at a fast rate—and then comes down gracefully in a perfect 3-point landing. You can't do it equal. And it's a beauty, too—colored red, white and black. Get this kit quickly. Enjoy building the HI-FLYER and then have hours of thrilling fun, making it perform for you. Kit contains full size layout sheets and instructions, balsa cut to size, semi-finished nose and plug, stamped ribs and formers, balsa prop block, 1/8" red celluloid wheels, bamboo former wire parts, rubber cement, balsa wood, and red, white and black tissue. Packed in sturdy box.

**IDEAL CHRISTMAS GIFT. COMPLETE KIT, 75¢ P.P.**  
Send Cash or Money Order (No Stamps or C.O.D.'s)

**TROST MODEL AIRPLANE  
SUPPLY COMPANY**  
3111 W. 63rd St., Dept. 20, Chicago, Ill.

photos, I began to look for a cheap way to get satisfactory closeups of them.

"The method I used will prove of interest to all model builders, I'm sure. Having studied the underlying principles of photography, I knew that a pinhole lens, consisting of a small hole in a piece of tin foil, has no definite focal length. The camera is always in focus for all objects, far or near. Taking advantage of the fact, I made a pin-hole camera out of a cigar box, with a simple arrangement for holding a small film pack in the back. A very simple job indeed; anybody who can make models will have no trouble in making such a camera. A friend druggist gave me some film packs that he could not sell, and which were "stale." So with the homemade camera and stale film, I tried a few pictures to see if my theory had been correct. The results you see enclosed in this letter. I did all the developing, etc., myself. (The first developing I had ever done.) Pictures No. 9 and No. 10 show a Fokker D VII and a Spad taken with this camera.

"The pictures, whatever their photographic value, serve to show that you can get remarkable closeups with the simple pinhole camera. Considering that the models are the size of the plans published in your magazine and were only 10" or so from the camera, I think that they are, well, not remarkable, but at least out of the ordinary. If you think that these pictures are out of focus, remember that the pinhole doesn't give quite as clearly defined pictures as a regular lens. If you doubt me, read up on lenses.

"If I should be so lucky as to get some of these pictures published in your "Air Ways—Here and There" pages, add that I would be only too glad to offer what assistance I can to other model builders. As I get the technique of taking these pinhole pictures down better, I shall send you some more of the results. These pictures were taken rather hurriedly when I saw the sun come out for the first time in nearly two weeks, so I didn't give as much thought to the background as I might otherwise have done."

Richard Buchanan of 92 Railroad Avenue, Rye, New York, has contributed Picture No. 11 which shows his 5-foot Curtiss Army Hawk. It is powered by a 4-cylinder compressed air engine. The tank within the fuselage carries 100 pounds pressure, which he says he finds insufficient to fly the plane properly. However, he intends to equip the machine with a tank which will withstand 250 pounds pressure. Unquestionably the results will be improved greatly. This picture shows Buchanan and his friend, Wilbur Truex, who is another model enthusiast and a competent assistant.

Some time ago, T. N. de Bobrovsky sent us some interesting pictures, one of which is picture No. 12 of a 3-foot flying model Handley-Page biplane, the original of which won the second Guggenheim prize. The model, which has automatic slots and flaps, was built by Frank Cellaro a Dickinson High School student.

Out in the little town of Linden, N. J., a very active group of model builders is springing up. Picture No. 13 shows a group of them, who have recently formed a club. In the picture left to right, they are: bottom: Walter Laucher, Silvio Colletti, Frank Barnacki and Edwin Trachele. Top, Fred Trachele, Joseph Barnacki and Eddie Rubis.

Picture No. 14 is an interesting one which shows a model Autogiro, built from the plans which appeared in the June issue of MODEL AIRPLANE NEWS. The ambitious

## ROCK BOTTOM PRICES ON SUPPLIES

Highest Quality Balsa Wood 2 x 6 x 26.....75  
3 x 5 x 40.....75

Sheet Balsa  
(18" Lengths)

1/16 x 1/16.....24 for .05  
1/16 x 1/8.....24 for .05

1/16 x 1/4.....24 for .07

1/8 x 1/8.....24 for .05  
1/8 x 1/16.....24 for .12

1/8 x 1/4.....24 for .15  
3/16 x 1/8.....24 for .15

3/16 x 3/16.....10 for .06  
1/16 x 3/16.....10 for .06

3/16 x 1/16.....10 for .07  
1/4 x 1/4.....10 for .08

1/4 x 1/8.....10 for .08  
1/4 x 1/16.....10 for .08

1/4 x 3/8.....6 for .09  
1/4 x 1/2.....6 for .09

3/8 x 3/8.....6 for .09  
3/8 x 1/2.....6 for .10

1/2 x 1/2.....4 for .10  
1/2 x 1/4.....4 for .10

1/2 x 1/2.....2 for .16

Plank Balsa  
1 x 2 x 26.....25  
1 x 6 x 36.....42  
2 x 3 x 36.....42

x 1 1/2 x 14.....2 for .09  
x 1 1/2 x 14.....2 for .16

Jap. Tissue sheet 20x24, white, 3 sheets 5¢; Colored, blue, red, orange, brown, 2 sheets 5¢; Double Thin Tissue, lightest ever known, sheets 20x24, each 5¢; Varnish, 1 pint, 20¢; Paint, 2000, 1 oz. 13¢; Colors, Acetone, strongest and lightest on the market, 1 oz. tube 6¢; 2 oz. tube 12¢; pint 1 oz. 12¢; Clear Dope and Acetone, 2 oz. can 7¢; 4 oz. can 13¢; pint 35¢; Colored Dope, leaves a fine smooth finish, colors, blue, red, yellow, orange, silver, black, and olive drab, 2 oz. can 9¢; 4 oz. can 17¢; pint can 60¢; Celluloid, straight-grained, 15" lengths, 15¢; 18" lengths, 18¢; 21" lengths, 21¢; 24" lengths, 24¢; 27" lengths, 27¢; 30" lengths, 30¢; 33" lengths, 33¢; 36" lengths, 36¢; 45" diam. 5¢; 48" diam. 7¢; 51" diam. 10¢; 54" diam. 13¢; 57" diam. 16¢; 60" diam. 20¢; 63" diam. 24¢; Aluminum N.A.C.A. Cowlings, eliminates use of dummy motor, 1 1/2" diam. 18¢; 2" diam. 20¢; 2 1/2" diam. 23¢; 3" diam. 26¢; Metal Wings, straight, sizes .014-.028, .034, 4 ft. 1c; Thrust Bearings, perfectly formed and with hole truly centered, large size, .035 hole, small size, .025 hole, 5¢; Washers, 5/8" O.D., per ft. 4¢; 3/16" O.D. per ft. 7¢; 1/4" O.D. per ft. 10¢; Aluminum Drag Rings, latest thing in streamlining your models, 1 1/2" diam. 15¢; 2" diam. 17¢; 2 1/2" diam. 20¢; 3" diam. 24¢; Aluminum N.A.C.A. Cowlings, eliminates use of dummy motor, 1 1/2" diam. 18¢; 2" diam. 20¢; 2 1/2" diam. 23¢; 3" diam. 26¢; Metal Wings, straight, sizes .014-.028, .034, 4 ft. 1c; Thrust Bearings, perfectly formed and with hole truly centered, large size, .035 hole, small size, .025 hole, 5¢; Washers, 5/8" O.D. and 1/4" O.D. 2¢; Celluloid Dummy Motors, 9 cylinders, 1 1/2" diam. 15¢; 3" diam. 27¢; Celluloid Wheels, 1 1/2" diam. 15¢; 2" diam. 18¢; 2 1/2" diam. 21¢; 3" diam. 24¢; 3 1/2" diam. 27¢; 4" diam. 30¢; 5" diam. 33¢; 6" diam. 36¢; 8" diam. 48¢; 10" diam. 60¢; 12" diam. 72¢; 14" diam. 84¢; 16" diam. 96¢; 18" diam. 108¢; 20" diam. 120¢; 22" diam. 132¢; 24" diam. 144¢; 26" diam. 156¢; 28" diam. 168¢; 30" diam. 180¢; 32" diam. 192¢; 34" diam. 204¢; 36" diam. 216¢; 38" diam. 228¢; 40" diam. 240¢; 42" diam. 252¢; 44" diam. 264¢; 46" diam. 276¢; 48" diam. 288¢; 50" diam. 300¢; 52" diam. 312¢; 54" diam. 324¢; 56" diam. 336¢; 58" diam. 348¢; 60" diam. 360¢; 62" diam. 372¢; 64" diam. 384¢; 66" diam. 396¢; 68" diam. 408¢; 70" diam. 420¢; 72" diam. 432¢; 74" diam. 444¢; 76" diam. 456¢; 78" diam. 468¢; 80" diam. 480¢; 82" diam. 492¢; 84" diam. 504¢; 86" diam. 516¢; 88" diam. 528¢; 90" diam. 540¢; 92" diam. 552¢; 94" diam. 564¢; 96" diam. 576¢; 98" diam. 588¢; 100" diam. 600¢; 102" diam. 612¢; 104" diam. 624¢; 106" diam. 636¢; 108" diam. 648¢; 110" diam. 660¢; 112" diam. 672¢; 114" diam. 684¢; 116" diam. 696¢; 118" diam. 708¢; 120" diam. 720¢; 122" diam. 732¢; 124" diam. 744¢; 126" diam. 756¢; 128" diam. 768¢; 130" diam. 780¢; 132" diam. 792¢; 134" diam. 804¢; 136" diam. 816¢; 138" diam. 828¢; 140" diam. 840¢; 142" diam. 852¢; 144" diam. 864¢; 146" diam. 876¢; 148" diam. 888¢; 150" diam. 900¢; 152" diam. 912¢; 154" diam. 924¢; 156" diam. 936¢; 158" diam. 948¢; 160" diam. 960¢; 162" diam. 972¢; 164" diam. 984¢; 166" diam. 996¢; 168" diam. 1008¢; 170" diam. 1020¢; 172" diam. 1032¢; 174" diam. 1044¢; 176" diam. 1056¢; 178" diam. 1068¢; 180" diam. 1080¢; 182" diam. 1092¢; 184" diam. 1104¢; 186" diam. 1116¢; 188" diam. 1128¢; 190" diam. 1140¢; 192" diam. 1152¢; 194" diam. 1164¢; 196" diam. 1176¢; 198" diam. 1188¢; 200" diam. 1200¢; 202" diam. 1212¢; 204" diam. 1224¢; 206" diam. 1236¢; 208" diam. 1248¢; 210" diam. 1260¢; 212" diam. 1272¢; 214" diam. 1284¢; 216" diam. 1296¢; 218" diam. 1308¢; 220" diam. 1320¢; 222" diam. 1332¢; 224" diam. 1344¢; 226" diam. 1356¢; 228" diam. 1368¢; 230" diam. 1380¢; 232" diam. 1392¢; 234" diam. 1404¢; 236" diam. 1416¢; 238" diam. 1428¢; 240" diam. 1440¢; 242" diam. 1452¢; 244" diam. 1464¢; 246" diam. 1476¢; 248" diam. 1488¢; 250" diam. 1500¢; 252" diam. 1512¢; 254" diam. 1524¢; 256" diam. 1536¢; 258" diam. 1548¢; 260" diam. 1560¢; 262" diam. 1572¢; 264" diam. 1584¢; 266" diam. 1596¢; 268" diam. 1608¢; 270" diam. 1620¢; 272" diam. 1632¢; 274" diam. 1644¢; 276" diam. 1656¢; 278" diam. 1668¢; 280" diam. 1680¢; 282" diam. 1692¢; 284" diam. 1704¢; 286" diam. 1716¢; 288" diam. 1728¢; 290" diam. 1740¢; 292" diam. 1752¢; 294" diam. 1764¢; 296" diam. 1776¢; 298" diam. 1788¢; 300" diam. 1800¢; 302" diam. 1812¢; 304" diam. 1824¢; 306" diam. 1836¢; 308" diam. 1848¢; 310" diam. 1860¢; 312" diam. 1872¢; 314" diam. 1884¢; 316" diam. 1896¢; 318" diam. 1908¢; 320" diam. 1920¢; 322" diam. 1932¢; 324" diam. 1944¢; 326" diam. 1956¢; 328" diam. 1968¢; 330" diam. 1980¢; 332" diam. 1992¢; 334" diam. 2004¢; 336" diam. 2016¢; 338" diam. 2028¢; 340" diam. 2040¢; 342" diam. 2052¢; 344" diam. 2064¢; 346" diam. 2076¢; 348" diam. 2088¢; 350" diam. 2100¢; 352" diam. 2112¢; 354" diam. 2124¢; 356" diam. 2136¢; 358" diam. 2148¢; 360" diam. 2160¢; 362" diam. 2172¢; 364" diam. 2184¢; 366" diam. 2196¢; 368" diam. 2208¢; 370" diam. 2220¢; 372" diam. 2232¢; 374" diam. 2244¢; 376" diam. 2256¢; 378" diam. 2268¢; 380" diam. 2280¢; 382" diam. 2292¢; 384" diam. 2304¢; 386" diam. 2316¢; 388" diam. 2328¢; 390" diam. 2340¢; 392" diam. 2352¢; 394" diam. 2364¢; 396" diam. 2376¢; 398" diam. 2388¢; 400" diam. 2400¢; 402" diam. 2412¢; 404" diam. 2424¢; 406" diam. 2436¢; 408" diam. 2448¢; 410" diam. 2460¢; 412" diam. 2472¢; 414" diam. 2484¢; 416" diam. 2496¢; 418" diam. 2508¢; 420" diam. 2520¢; 422" diam. 2532¢; 424" diam. 2544¢; 426" diam. 2556¢; 428" diam. 2568¢; 430" diam. 2580¢; 432" diam. 2592¢; 434" diam. 2604¢; 436" diam. 2616¢; 438" diam. 2628¢; 440" diam. 2640¢; 442" diam. 2652¢; 444" diam. 2664¢; 446" diam. 2676¢; 448" diam. 2688¢; 450" diam. 2700¢; 452" diam. 2712¢; 454" diam. 2724¢; 456" diam. 2736¢; 458" diam. 2748¢; 460" diam. 2760¢; 462" diam. 2772¢; 464" diam. 2784¢; 466" diam. 2796¢; 468" diam. 2808¢; 470" diam. 2820¢; 472" diam. 2832¢; 474" diam. 2844¢; 476" diam. 2856¢; 478" diam. 2868¢; 480" diam. 2880¢; 482" diam. 2892¢; 484" diam. 2904¢; 486" diam. 2916¢; 488" diam. 2928¢; 490" diam. 2940¢; 492" diam. 2952¢; 494" diam. 2964¢; 496" diam. 2976¢; 498" diam. 2988¢; 500" diam. 3000¢; 502" diam. 3012¢; 504" diam. 3024¢; 506" diam. 3036¢; 508" diam. 3048¢; 510" diam. 3060¢; 512" diam. 3072¢; 514" diam. 3084¢; 516" diam. 3096¢; 518" diam. 3108¢; 520" diam. 3120¢; 522" diam. 3132¢; 524" diam. 3144¢; 526" diam. 3156¢; 528" diam. 3168¢; 530" diam. 3180¢; 532" diam. 3192¢; 534" diam. 3204¢; 536" diam. 3216¢; 538" diam. 3228¢; 540" diam. 3240¢; 542" diam. 3252¢; 544" diam. 3264¢; 546" diam. 3276¢; 548" diam. 3288¢; 550" diam. 3300¢; 552" diam. 3312¢; 554" diam. 3324¢; 556" diam. 3336¢; 558" diam. 3348¢; 560" diam. 3360¢; 562" diam. 3372¢; 564" diam. 3384¢; 566" diam. 3396¢; 568" diam. 3408¢; 570" diam. 3420¢; 572" diam. 3432¢; 574" diam. 3444¢; 576" diam. 3456¢; 578" diam. 3468¢; 580" diam. 3480¢; 582" diam. 3492¢; 584" diam. 3504¢; 586" diam. 3516¢; 588" diam. 3528¢; 590" diam. 3540¢; 592" diam. 3552¢; 594" diam. 3564¢; 596" diam. 3576¢; 598" diam. 3588¢; 600" diam. 3600¢; 602" diam. 3612¢; 604" diam. 3624¢; 606" diam. 3636¢; 608" diam. 3648¢; 610" diam. 3660¢; 612" diam. 3672¢; 614" diam. 3684¢; 616" diam. 3696¢; 618" diam. 3708¢; 620" diam. 3720¢; 622" diam. 3732¢; 624" diam. 3744¢; 626" diam. 3756¢; 628" diam. 3768¢; 630" diam. 3780¢; 632" diam. 3792¢; 634" diam. 3804¢; 636" diam. 3816¢; 638" diam. 3828¢; 640" diam. 3840¢; 642" diam. 3852¢; 644" diam. 3864¢; 646" diam. 3876¢; 648" diam. 3888¢; 650" diam. 3900¢; 652" diam. 3912¢; 654" diam. 3924¢; 656" diam. 3936¢; 658" diam. 3948¢; 660" diam. 3960¢; 662" diam. 3972¢; 664" diam. 3984¢; 666" diam. 3996¢; 668" diam. 4008¢; 670" diam. 4020¢; 672" diam. 4032¢; 674" diam. 4044¢; 676" diam. 4056¢; 678" diam. 4068¢; 680" diam. 4080¢; 682" diam. 4092¢; 684" diam. 4104¢; 686" diam. 4116¢; 688" diam. 4128¢; 690" diam. 4140¢; 692" diam. 4152¢; 694" diam. 4164¢; 696" diam. 4176¢; 698" diam. 4188¢; 700" diam. 4200¢; 702" diam. 4212¢; 704" diam. 4224¢; 706" diam. 4236¢; 708" diam. 4248¢; 710" diam. 4260¢; 712" diam. 4272¢; 714" diam. 4284¢; 716" diam. 4296¢; 718" diam. 4308¢; 720" diam. 4320¢; 722" diam. 4332¢; 724" diam. 4344¢; 726" diam. 4356¢; 728" diam. 4368¢; 730" diam. 4380¢; 732" diam. 4392¢; 734" diam. 4404¢; 736" diam. 4416¢; 738" diam. 4428¢; 740" diam. 4440¢; 742" diam. 4452¢; 744" diam. 4464¢; 746" diam. 4476¢; 748" diam. 4488¢; 750" diam. 4500¢; 752" diam. 4512¢; 754" diam. 4524¢; 756" diam. 4536¢; 758" diam. 4548¢; 760" diam. 4560¢; 762" diam. 4572¢; 764" diam. 4584¢; 766" diam. 4596¢; 768" diam. 4608¢; 770" diam. 4620¢; 772" diam. 4632¢; 774" diam. 4644¢; 776" diam. 4656¢; 778" diam. 4668¢; 780" diam. 4680¢; 782" diam. 4692¢; 784" diam. 4704¢; 786" diam. 4716¢; 788" diam. 4728¢; 790" diam. 4740¢; 792" diam. 4752¢; 794" diam. 4764¢; 796" diam. 4776¢; 798" diam. 4788¢; 800" diam. 4800¢; 802" diam. 4812¢; 804" diam. 4824¢; 806" diam. 4836¢; 808" diam. 4848¢; 810" diam. 4860¢; 812" diam. 4872¢; 814" diam. 4884¢; 816" diam. 4896¢; 818" diam. 4908¢; 820" diam. 4920¢; 822" diam. 4932¢; 824" diam. 4944¢; 826" diam. 4956¢; 828" diam. 4968¢; 830" diam. 4980¢; 832" diam. 4992¢; 834" diam. 5004¢; 836" diam. 5016¢; 838" diam. 5028¢; 840" diam. 5040¢; 842" diam. 5052¢; 844" diam. 5064¢; 846" diam. 5076¢; 848" diam. 5088¢; 850" diam. 5100¢; 852" diam. 5112¢; 854" diam. 5124¢; 856" diam. 5136¢; 858" diam. 5148¢; 860" diam. 5160¢; 862" diam. 5172¢; 864" diam. 5184¢; 866" diam. 5196¢; 868" diam. 5208¢; 870" diam. 5220¢; 872" diam. 5232¢; 874" diam. 5244¢; 876" diam. 5256¢; 878" diam. 5268¢; 880" diam. 5280¢; 882" diam. 5292¢; 884" diam. 5304¢; 886" diam. 5316¢; 888" diam. 5328¢; 890" diam. 5340¢; 892" diam. 5352¢; 894" diam. 5364¢; 896" diam. 5376¢; 898" diam. 5388¢; 900" diam. 5400¢; 902" diam. 5412¢; 904" diam. 5424¢; 906" diam. 5436¢; 908" diam. 5448¢; 910" diam. 5460¢; 912" diam. 5472¢; 914" diam. 5484¢; 916" diam. 5496¢; 918" diam. 5508¢; 920" diam. 5520¢; 922" diam. 5532¢; 924" diam. 5544¢; 926" diam. 5556¢; 928" diam. 5568¢; 930" diam. 5580¢; 932" diam. 5592¢; 934" diam. 5604¢; 936" diam. 5616¢; 938" diam. 5628¢; 940" diam. 5640¢; 942" diam. 5652¢; 944" diam. 5664¢; 946" diam. 5676¢; 948" diam. 5688¢; 950" diam. 5700¢; 952" diam. 5712¢; 954" diam. 5724¢; 956" diam. 5736¢; 958" diam. 5748¢; 960" diam. 5760¢; 962" diam. 5772¢; 964" diam. 5784¢; 966" diam. 5796¢; 968" diam. 5808¢; 970" diam. 5820¢; 972" diam. 5832¢; 974" diam. 5844¢; 976" diam. 5856¢; 978" diam. 5868¢; 980" diam. 5880¢; 982" diam. 5892¢; 984" diam. 5904¢; 986" diam. 5916¢; 988" diam. 5928¢; 990" diam. 5940¢; 992" diam. 5952¢; 994" diam. 5964¢; 996" diam. 5976¢; 998" diam. 5988¢; 1000" diam. 6000¢; 1002" diam. 6012¢; 1004" diam. 6024¢; 1006" diam. 6036¢; 1008" diam. 6048¢; 1010" diam. 6060¢; 1012" diam. 6072¢; 1014" diam. 6084¢; 1016" diam. 6096¢; 1018" diam. 6108¢; 1020" diam. 6120¢; 1022" diam. 6132¢; 1024" diam. 6144¢; 1026" diam. 6156¢; 1028" diam. 6168¢; 1030" diam. 6180¢; 1032" diam. 6192¢; 1034" diam. 6204¢; 1036" diam. 6216¢; 1038" diam. 6228¢; 1040" diam. 6240¢; 1042" diam. 6252¢; 1044" diam. 6264¢; 1046" diam. 6276¢; 1048" diam. 6288¢; 1050" diam. 6300¢; 1052" diam. 631

young man who built this ship so beautifully is Jack Clark of 107 Tremont Avenue, Fort Thomas, Ky. Clark is an old contributor to this column. He tells us that it flew very well.

It would be most interesting to our readers, I am sure, to have a picture of this machine in flight. We will try to persuade Clark to favor us with one.

Picture No. 15 shows a very uncommon plane in flight. It is a DeH-4. We would say that Bradford Noble, R.F.D. 3, Waterbury, Conn., is an expert in building scale models that fly. This certainly must be a swell little ship. In the picture it is at an elevation of 75 feet. It has a span of 18 inches and weighs about three-quarters of an ounce.

Our old friend, Howard Earp of Payette, Idaho, contributes Picture No. 16 of his Lockheed Sirius in flight. Pictures such as this should make model builders envious for evidently Earp has solved the problem of making a scale model fly. He says it is an exact scale model of the latest Sirius. It has a wing spread of 31½", is 21¾" long and weighs a little over two ounces. This is very little weight for such a large machine and would indicate that excellent workmanship has been involved in its construction.

Jack Sheppard, Jr., of 1216 South Howard Avenue, Tampa, Fla., sends us Picture No. 17 of his Ideal Supermarine in flight. We feel that this picture is very unusual as it is difficult to build a model of this ship which will fly with any degree of stability. When this picture was taken, it was flying at an altitude of 35 feet. Sheppard tells us that the landing was rather rough, which resulted in "washing out" the floats. There was very little damage otherwise.

A very neatly built flying scale model of a Nieuport Scout is shown in Picture No. 18. This was built by Gaylord Specht of 1104 B Avenue, East, Oskaloosa, Iowa. He says it has made some very excellent and stable flights. The coloring is silver and blue. The controls are adjustable.

Tom Pratt, Jr., of 138 Hillsboro Heights, Knoxville, Tenn., has recently built a neat-looking Hawker Fury from the plans published in this magazine, which is shown in Picture No. 19. It required about 35 hours of work to finish this model. It is graced with movable controls and a color scheme of green and white.

One of the most unusual pictures of a Polish Fighter, Picture No. 20, that has ever come into this office, has been submitted by Leroy L. Milliren, who lives at 451 Earl Court, Elyria, Ohio. I believe that many of our readers will agree that this is a swell looking ship. Milliren says that he worked 51 hours to complete it, at the end of which time he was rewarded with some excellent flights from it.

Frank Neheg of 9403 Yeakel Avenue, Cleveland, Ohio, contributes Picture No. 21 of his model Travelair Mystery which is attached to his model pylon in such a manner as to simulate the appearance of a full-sized craft, in one of the recent trophy races. In this issue, plans are given for a pylon similar to the one shown in this picture, so you have at your hand a means to build one for yourself. Two fine wires extending out from the top of the pylon, hold the model in the position shown in the picture.



### SOPWITH TRIPLANE

This SOPWITH TRIPLANE kit has 58 feet of accurately cut balsa sticks; all ribs and other special parts printed and formed for you; Jap tissue in correct colors; machine carved propellers; in fact, everything you need to build this scale model. The scale is 1 inch to the foot, making a wing span in this model of over 26 inches. See the cover of April "Model Airplane News" for an art picture of the Sopwith Triplane, one of the best British wartime planes.

**COMPLETE KIT, postpaid \$2.50**

LAWRENCE PARASOL, JUNIOR

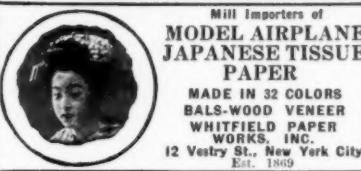
### PARASOL JUNIOR LOW WING JUNIOR

The LAWRENCE PARASOL JUNIOR, is the brand-new design and sister ship of the LOW WING JUNIOR (pictured below). These two model kits contain 30 feet of accurately cut balsa sticks, machine carved propellers, fittings already made, Jap tissue in colors, and a complete set of drawings and instructions. The wing span of the Lawrence Parasol Junior, and the Lawrence Low Wing Junior, is twenty inches. Either ship will fly from one to two minutes and rise off ground realistically. You will say, with us, that these two models are the neatest and best flyers of their type you have ever built.

**ORDER YOURS NOW!**

**EITHER KIT postpaid 50¢**

**LAWRENCE AIRPLANE MODELS, 1221 LOYOLA CHICAGO**



Mill Importers of  
**MODEL AIRPLANE JAPANESE TISSUE PAPER**  
MADE IN 32 COLORS  
BALS-WOOD VENEER  
WHITFIELD PAPER WORKS, INC.  
12 Vestry St., New York City  
Est. 1869

**EVERY ADVERTISER**  
in  
**Universal Model Airplane News**  
*Is Trustworthy*

### Model Airplane Material

Five large sheets of colored Japanese tissue 20 x 24". Balsa wood of various sizes, rubber band and other supplies including our price list. All for 25c, five bundles for \$1.00. Postpaid.

**Aero Shop, 3650 Hurbut Avenue, Detroit, Mich.**



**Print Your Own**  
Cards, Stationery, Circulars, Advertising, etc. Save money. Print for others, big profit. Junior Press, \$5.90. Job press \$11 up. Power \$149. Many rules sent. Write for free catalog with all details. The KELSEY Co., V-8, Morristown, Conn.

### BUILD 4 SCALE MODELS for \$1.25



### Hawk P-5 - Curtis Racer - Hawker Fury - Supermarine

All four of the above planes sold in kit form only. The fuselage, wings, stabilizer, rudder, and pontoons are cut from Balsa to shape, leaving only the hand finishing to the builder. Scale die cast propellers, wheels and material for struts, together with full-size prints and cement, are included in the kits. These sets build up into 6-inch solid wood scale models, and represent some of the world's finest aeroplanes. All 4 of the above kits can be had for \$1.25, separate sets sold at 50 cents each, all sent postpaid and guaranteed to be as advertised.

*Send 5 Cents for our latest catalogue. We have a full line of blueprints for World War planes and model supplies of the better grade.*

**WHEN YOU ARE IN CHICAGO COME AND SEE OUR MODEL DISPLAY**  
**HAWK MODEL AEROPLANES, Dept. H, 4944 Irving Park Blvd., Chicago, Ill.**

## CLASSIFIED DIRECTORY

Advertise in this directory for quick results. Rate: 10c per word. Cash with order. Minimum space, 16 words. February ads. must be in by December 25th.

### MODEL AIRPLANES—PLANS—MATERIALS

NEW Broadfield Gliders—"Famous for Flights"—Remarkable Soaring performance—Pine Bodies—Cambered Balsa Wings—Quick Assembly (no bands) Wings Adjustable. No. 65, 18" wing, \$5.00; No. 66, 22" wing, 50c. Order Both by Mail, 75c postage. Send separately, 10c extra. Agents wanted. Broadfield Aeroplane Co., Hempstead, N. Y.

ALL-BUILT Guaranteed to Fly Model Helicopter, \$1.50 each. Catalog sent free. Broadfield Model Aircraft Co., 1328 Flatbush Ave., Brooklyn, N. Y.

WHEELS—Wheel pants—Cowlings or celluloid for model airplanes. Wholesale only. Empire Company, Arlington, N. J.

SCHAF Wood, 25¢ will bring you postpaid, enough wood for 5 ships. Joseph Gaidar, 194 W. 51st St., Chicago, Ill.

THREE—View detailed full-scale speed model drawings of Gee Bee, Laird, Vega, Sirius, P-12-B and Travelair. Any 3 planes, 25¢, with aluminum Propeller Free. Golden Arrow Models, 53 Vinewood Ave., Pontiac, Mich.

20" LAIRD Kit, ready shaped cowling, pants, \$1. Catalog free. Hawthorne Model Air Co., Hawthorne, N. J.

WE manufacture and distribute small and large Thrust Bearings, small Brass Washers, flat Para Rubber. Model concerns, write for wholesale prices. Model Aero Supply Mfg. Co., 1654 St. John Place, Brooklyn, N. Y.

MINIATURE Solid Scale Planes, World War or modern ships made to order. Priced \$1 to \$5. Hand-made parts sold separately. Send stamp for information. Monroe Model Aircraft, 1718 Harrison St., Evanston, Ill.

22" GEE-BEE II Racer, Complete Kit with celluloid pants, prop, etc. \$1. Catalog free. Orion Specialty Co., Hawthorne, N. J.

MODEL Building Service. Models custom built from kits. Quality workmanship. Send stamp for list. Frank T. Roberts, Jamesburg, N. J.

WE now manufacture an entirely New Mechanism for Model Airplanes. Postal for complete data. Dealers only. Travis Model Airplane Co., P. O. Box 873, Colorado Springs, Colo.

DEALERS and Clubs—Write for our Price List of Model Airplane Supplies. We guarantee you won't be sorry. Prices lower than ever! Wholesale only. United Model Supply Co., P. O. Box 351, 16 Court St., Brooklyn, N. Y.

SEE our Free Offer on page 43. Universal Model Airplanes, 16 St. John Place, Brooklyn, N. Y.

JAPANESE Model Airplane Tissue, 32 colors, also Wood Veneer. Send for samples. See our ad this paper with Jap. Girl's Face. Whitfield Paper Works, Importers, 12 Vestry Street, New York City.

### AVIATION COURSES

GUARANTEED Home Study Flying Course, \$1.00 complete. Nothing else like it. Order immediately. Neil Tasker, Shamokin, Pennsylvania.

AVIATION—Boys and Girls, marvelous, ten lesson course—four including pilot ratings, commission, etc. Send 25¢ for first lesson and full details. National Young Flyers League, 816 Chimes Bldg., Syracuse, N. Y.

### PATENTS AND INVENTIONS

UNPATENTED ideas can be sold. I tell you how and help you make the sale. Fine particulars (Copyrighted). Write W. T. Greene, 957 Barrister Bldg., Wash. D. C.

## THREE FINE GIFTS!

With every new subscription to UNIVERSAL MODEL AIRPLANE SERVICE we give the famous Comet Dipper model plane, an Aviator's silver wings pin, and an honorary membership in the World-Wide organization of Aero Science Crusaders. Send your subscription today with \$1.65 to E. Desner, Jay Publishing Corp., 125 W. 15th St., New York City.

## SUPPLIES AT DEEP CUT PRICES

### Super-Quality Balsa Wood

#### 20" lengths

1/16 x 1"	20 for 5¢
1/16 x 1/8	20 for 5¢
3/32 x 3/32	20 for 5¢
1/8 x 1/8	20 for 5¢
1/8 x 1/4	20 for 5¢
1/4 x 1/4	20 for 17¢

#### 20" Sheet Balsa

1/64 x 1"	5 for 8¢
1/32 x 2"	5 for 8¢
1/16 x 2"	5 for 8¢
1/8 x 2"	4 for 8¢

#### Prop Blocks

9/8 x 3" x .5" x 2" for 1¢
1/2 x 3/4 x 5" x 6" for 5¢
3/4 x 1" x 5" x 6" for 5¢
5/8 x 1" x 5" x 6" for 5¢
3/4 x 1" x 1/2 x 10" for 25¢

#### Washers—Large or small

2 doz. 3¢; Gross 14¢
Reed

1/32 or 1/16", 6 ft. 3"
Aluminum Tubing

1/16" O.D., per ft. .6¢
1/8" O.D., per ft. .7¢

Include 15 cents to all orders up to \$1.50. Orders of \$1.51 and over, add 10% for packing and postage. (Orders west of Mississippi, add 10 cents extra.) On all Canadian and foreign orders up to \$1.50, add 25¢. On orders of \$1.51 and over, add 15% for packing and postage.

No discount on above prices. No catalog sent.

### Cellophane Wheels

#### in all colors

3/4" diam. pr. .... 4¢

1" diam. pr. .... 8¢

1 1/2" diam. .... 12¢

Banana Oil

2 oz. 7¢; pt. 48¢

Ascorbic—2 oz. 7¢; pt. 48¢

Cellophane Sheets

Small 14" x 10" 25¢

Colored Dope

All colors and clear

1 oz. 7¢; 2 oz. 10¢

Colorless Cement

1 oz. 8¢; 2 oz. 12¢

Thread Spool

Small 1 oz. each 13¢

Para Rubber

1/16" flat, 50 ft. .... 12¢

1/8" flat, 50 ft. .... 13¢

Jap. Tissue—Red, yellow, blue, orange, green, purple

each sheet 10¢

Musie Spring Wire

.014", .020", .028", .034"

18 ft. .... 5¢

Double-Gear Winders

Each ..... 25¢

## CLUB NEWS

ONE of the most progressive model airplane clubs in the country is the Columbus Society of Model Engineers at 91 Wetmore Road, Columbus, Ohio. The president, Mr. J. E. Konkle, has submitted several photographs of machines built by members, which may be of interest to our readers.

One, a model Vought Corsair built by Nelson Black of 1085 Fair Avenue, Columbus, is shown in Picture No. 22. This is a 2-foot model and was accorded third place in the A.M.L.A. 1931 National contest. All the controls are maneuverable and the machine was judged 94.6% perfect.

Picture No. 23 shows a Bird biplane which was constructed by John Malloy of 101 W. Webster Park Avenue, Columbus. To our knowledge, this is the first picture of a model Bird biplane that has appeared in our columns. It is a pretty neat job.

Several of the members of the club became industrious at the recent airplane races at Cleveland and took some interesting photographs of some of the ships assembled for this great event. Picture No. 24 shows a very intriguing picture of the large Boeing Bomber.

Picture No. 25 gives a good view of the latest low-wing Gee-Bee, which has attracted so much attention.

One of the latest Howard Racers is shown in Picture No. 26. Something new in the line of a Gee-Bee is shown in Picture No. 27. This ship is a decided departure from the old style planes built by this company. As you will note, it is a high-wing machine. It is said that this plane will travel nearly 300 miles an hour. It is different also, in the fact that the tail surfaces are very much larger than those used on the low-wing ships. Those readers who have kept pace with aerodynamic practice used in airplane design will know that ships with larger vertical tail surfaces have less tendency to spin than those ships which have a minimum of vertical tail surfaces. For this reason, this high-wing job should be much more stable than the low-wing ships used previously.

HERE we have a word from far-off Australia again this month. Mr. Ivor Freshman, secretary of the Model Flying Club of Australia, has sent us two photographs for our columns.

One of them, Picture No. 28, shows five of the members of the "Concord Squirrels," a branch of the above club. The outstanding thing about these chaps is that they all flew their machines out of sight on the same morning, recently. Reginald Searle put up his ship for 42' 17" before it disappeared in the sky. This comes very close to the Australian record for single propeller tractors.

Mr. Freshman wishes to thank all of our readers who have taken interest in the young men in his part of the world. He will welcome letters from young American boys who have something of interest to tell him.

Picture No. 29 shows Stan Baker of the "Concord Squirrels" with his giant model of the "Winnie Mae." This model has a span of 4 feet and has flown for 2' 37" officially.

# Christmas Specials

## AERO MODEL RESEARCH LAB.

### 24" STRIPS

1/32" x 1/16"	25	for Se
1/16" x 1/8"	25	for Se
1/16" x 1/4"	25	for Se
1/8" x 1/8"	25	for Se
1/8" x 1/4"	25	for Se
3/16" x 3/16"	15	for Se
3/16" x 1/4"	10	for Se
1/4" x 1/4"	10	for Se

24" PLANKS	24" SHEETS
1/64" x 2" x 3" (3c) x 4" (3c)	1" x 2" x 24" ... 10c
1/32" x 2" x 3" (3c) x 4" (3c)	2" x 2" x 24" ... 20c
1/16" x 2" x 3" (3c) x 4" (3c)	3" x 2" x 24" ... 30c
1/8" x 2" x 3" (3c) x 4" (10c)	4" x 1" x 24" ... 4c
1/4" x 1/4" x 1/4" x 1/4"	5" x 1/2" x 24" ... 5c

### NOTICE! NO ORDERS UNDER \$1.00

15¢ extra and Packing Charges on Orders up to \$1.50. \$1.51 and over add 10%.

**Money Orders Only. No Cheques or Stamps**

Box 1051

Long Beach, California

## NICE STARTER

Collection of 61 DIFFERENT \$1.00 AIR MAIL STAMPS including Cuba Lindbergh Stamp

L. W. CHARLAT

Leading Dealer in AIR MAIL STAMPS

180 BROADWAY

NEW YORK

## An Article

on Air Mail Stamps appeared on this page in each issue of UNIVERSAL MODEL AIRPLANE NEWS. The editor has been forced by his limited space to omit the article in this issue. Reader wishing to ask questions about Air Mail Stamp collecting may write:—Mr. L. W. Charlat, care of this magazine.

## Outstanding Value

### NEW!

### MIDGET AIRCRAFT

One T Wingspan



### 16 Types

Marchi Racer Spad Waco Fokker D-7

Pigeon Carrier Lockheed Exp. Ansaldo Travelair

Baby Avro Fokker Super. Boeing 204 Curtiss JN4B

Rumpler Loening Amph. Gipsy Moth Sikorsky Amph.

Each Kit complete: Alum. prop.; Wheels; Paint; Cement; Full-sized Drawing, etc.

Nothing else needed.

### Also a Full Line of Supplies

Nieuport Mono, 12" ... 1.60 P.P.

Nieuport Bipl., 12" ... 1.10 P.P.

Spad Biplane, 12" ... 1.60 P.P.

Fledgling, 22" ... 1.60 P.P.

Curtiss Robin, 20" ... 1.60 P.P.

Curtiss Hawk, 16" ... 1.60 P.P.

Biplane, 24" ... 1.65 P.P.

Albatross C5, 22" ... 2.65 P.P.

Fokker D-7, 22" ... 3.15 P.P.

Sopwith Camel, 22" ... 3.15 P.P.

If your dealer cannot supply you order direct

## U.S.-MODEL AIRCRAFT CORP.

443 HUDSON AVE. • BROOKLYN-N.Y.

A Merry Christmas To All



"Merry Xmas!"

# GIVEN NEW Balsa GLIDER!

This brand-new, all-balsa Glider (12" x 6") Given with "Prop" is ordered from this page or from our ad on back of this page! It's colored "GIFT" with such \$1 and \$1.50 kit! Invented by 3d man ever to fly in U.S.! And NEW customers get FREE our 24-page, 5-COLOR CATALOG with order. Otherwise, send 3c stamp for mailing cost! Order kits now! QUICK SERVICE GUARANTEED!

## 4 More Comet PLANES in FULL COLORS on BACK of THIS PAGE!

Our November color-page amazed, delighted, excited the model building world! Now Comet again sweeps the field by printing FOUR Planes in full, actual life-like colors! Show this page and OTHER SIDE OF PAGE to your parents for Christmas!

gift suggestion! Read new below quick with you can get a BIG TUBE COMET FAMOUS CEMENT FREE! Make it a "Merry Comet Christmas, Gang!" CONTACT: Let's Order now! Remember, Satisfaction Guaranteed or Money Refunded:

## SPECIAL Xmas OFFER:

Save cash! Order Comet Kits in "Gift Groups." See back side of this page for other Comet Kits. Each GROUP is SPECIAL at \$2 prepaid instead of \$2.25! Select Groups you want now, mark coupon! GROUP No. 1: Dipper, Pursuit, Red R. No. 2: Dipper, Pursuit, Bullet. No. 3: Dipper, Pursuit, Dart. No. 4: Dipper, Pursuit, Dart. No. 5: Dipper, Howard R, Red R. No. 6: Dipper, Howard R, Bullet. No. 7: Dipper, Howard R, Dart. No. 8: Dipper, Howard R, Curtiss R. No. 9: Dipper, Zipp, Red R. No. 10: Dipper, Zipp, Bullet. No. 11: Dipper, Zipp, Dart. No. 12: Dipper, Zipp, Curtiss R. No. 13: USN Racer, Army Pursuit. No. 14: USN Racer, Howard R. No. 15: USN Racer, Zipp.

**3 KITS \$2 EACH in "Gift" Box Prepaid**

AND YOU GET FREE Glider with each kit in each Group! Free Celuloid "prop" with each \$1 and \$1.50 kit! Each Comet Kit in each Group is individually packed in snappy "Gift" Box. Give Comet Kit Groups to friends for Xmas! Order your Group now—and save money doing it!

## New Z-I-P-P Easier to Build Than Dipper. FLIES!

Builders everywhere say to ZIPP like bees take to honey—and, gang—she's a honey! Beautiful lines, bright blue and white checkered wing design, blue fuselage—is EASY to build—FLIES great—costs only 75¢ postpaid! Free Glider! Kit is COMPLETE! Paints neatly in beautiful colored box. Get yours quick! Tell Santa you want it!

**75¢ Prepaid or at DEALER'S**

## "My Comet HOWARD RACER, Looks, Flies Better



Than any Scale Model I've made in 8 years!!! That's what J. M. West of N. Dak. writes! You, too, should build and fly this sensational Comet-crafted FLYING SCALE MODEL, really and truly FLIES! Complete KIT in beautiful "Gift" Box with Free Glider, only 75¢ prepaid. Order quick on Coupon (back side of this page)! Hurry!



## "Most Perfect Flying Model I Ever Made! Longest Flight 2000 Feet!"

It was also our speediest model! (E. Von Czebar & R. Pauli, N. Y.) Built this big 22" x 16½" proven, speedy flier! Costs only \$1 prepaid! Easy to build! Detachable wings! WOW! Here is real fun, Great flights! And the big, complete kit with Free Glider in a big "Gift" Box. Order quick, PLEASE! You'll be happy. Tell Santa He'll RUSH IT TO YOU!



**\$1 Prepaid or at DEALER'S**

**See Back of This Page**

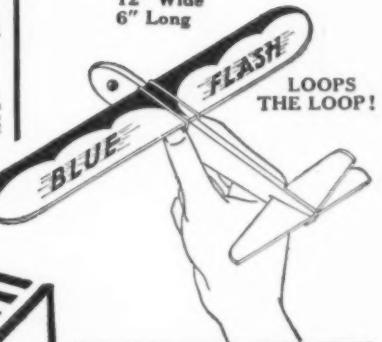
## CURTISS ROBIN FLIES 5 TIMES AS FAR!



**\$1 Prepaid or at DEALER'S**

"Thought my Dipper was wonderful but the Curtiss Robin Flying Scale—OH, BOY! She flies 5 times as far! Enclosing 75¢ for 'Howard Racer'! (Harry Magni, N.Y.) Built this amazing flying model! Didn't build it 17½" x 14"—cost only \$1 prepaid! FLY it like Harry Magni did! Red, orange, black colors. Stunning! COMPLETE Kit sent you with Free Glider and Free Celuloid "Prop." Inside beautiful "Gift" Box. Order this Flying scale bargain today! It's Comet-crafted—so order with confidence. Use Coupon now!

12" Wide  
6" Long

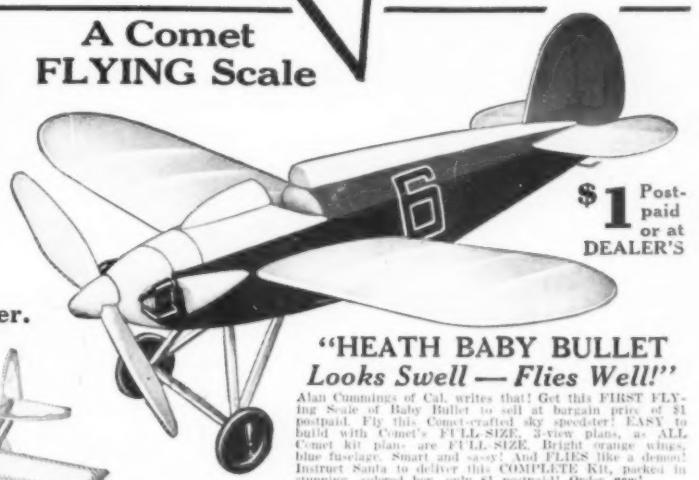


**FLASH LOOPS THE LOOP!**

## 5-COLOR CATALOG FREE

with each new customer order, or send 3c stamp for mailing cost.

## A Comet FLYING Scale



**\$1 Post-paid or at DEALER'S**

## "HEATH BABY BULLET Looks Swell — Flies Well!"

Alan Cummings of Cal. writes that! Get this FIRST FLYING Scale Baby Bullet and sell at regular price, \$1 postpaid! Fly this tiny craft in your spooler! EASY to build with Comet's FULL SIZE, 3-view plans. ALL Comet kit planes are FULL SIZE. Bright orange wings, blue fuselage. Smart and sassy! And FLIES like a demon! Instruct Santa to deliver this COMPLETE Kit, packed in stunning, colored box, only \$1 postpaid! Order now!

## GIVEN Tube Comet Cement!

You get a big, free tube (see actual size photo) of Comet's famous quick-drying cement IF

YOU ORDER YOUR KITS THROUGH ANY Hardware, Department, variety, school-supply or drug store who is NOT A COMET DEALER! This is to get the favorite cement of thousands of handling the famous line! YOU DO THIS: Pick out kits you want on this page and on other side of this page—then write your order on YELLOW COUPON SIDE. Take Coupon with your money to dealer, ask him to order Comet for you. We will then include FREE tube Cement in your order and mail it to you to the place where you call for them. If you prefer, ORDER DIRECT FROM US! We hope you will get the Free Cement by helping us get a new Dealer in your locality!

## Coupon Side for DEALERS Only!

Hardware, Department, School-Supply, Variety or Drug Stores! Accept this coupon, write your name and address, asking you to order kits for them. We'll include the shipment Big Tube Comet Cement FREE! Cooperate, help them get Cement FREE! YOU DO THIS: Collect price of kits from customer, send to us with Coupon. We ship them to you prepaid. If you order C.O.D., we pay postage. C.O.D. for on delivery and collect from customer. We Mail you OUR Check, Mr. Dealer, As Commission—which is YOUR Dealer's Discount! That's fair enough, isn't it? And get this, please: WRITE AT ONCE for full details of Comet's Special "Guaranteed Sale" Offer. Lets you stock up now without risking a cent! Sales are guaranteed!

**SALES GUARANTEED**  
Get our "Guaranteed Sale" Offer now! Comet Kits SELL! Prices from 50¢ to \$1.50. BIG magazine advertising helps sell 'em! Kits packed in strong, "sell-on" style, colorful boxes, 100% Customer Satisfaction. Your room represents a lot to men, boys! INVESTIGATE QUICK! Hundreds of dealers making quick, easy, effortless profits—and in these times! You can, too. WRITE!



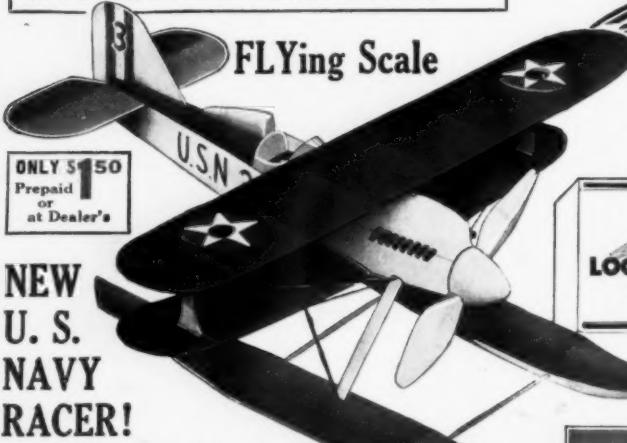
Fast for Model Building  
• Quick Drying  
• Colorless  
• Light Weight

NOT LESS THAN 5 DRAM

# GIVEN

## NEW 12" GLIDER!

This big, brand-new "Blue Flash" colored Glider "GIVEN" with each kit ordered from this page or from other side of this page! It loops the loop! Stunts! Size: 12" x 6". Order 2 kits, get 2 Free Gliders; 3 kits, 3 Free Gliders, etc. ALSO GIVEN: Amazing new Formed Celluloid "Prop" with each \$1 and \$1.50 kit. **Invented by 3d man ever to FLY in U.S.A.** It banishes "prop" carving! Now read each word of this page, and back side of this page! Then ORDER!



## NEW U. S. NAVY RACER!

The Xmas gift de luxe at low price of only \$1.50 prepaid! This Comet-Crafter Flying scale RISES OFF WATER! Big fun hand-launching for land flying. (Lands O.K. on pontoons!) It is beautiful! And dead easy to build! Complete kit comes in handsome silvered "Gift" Box shown to right. You'll be crazy about it! Glider, Celluloid "prop," Given!

### SPECIAL Xmas Offer: 3 KITS \$2

Save cash! Order kits in "Gift Groups"! (See other side of this page for other Comet Kits.) Each Group is only \$2 prepaid, instead of \$2.50! You can have any 3 of the 12 Groups you want NOW! Group No. 1: Dipper, Pursuit, Dart. No. 2: Dipper, Pursuit, Curtiss R. No. 3: Dipper, Howard R., Zipp, Bullet. No. 4: Dipper, Pursuit, Dart. No. 5: Dipper, Zipp, Bullet. No. 6: Dipper, Zipp, Dart. No. 7: Dipper, Zipp, Red R. No. 10: Dipper, Zipp, Bullet. No. 11: Dipper, Zipp, Dart. No. 12: Dipper, Zipp, Curtiss R. All groups come with Free Glider, prop, etc. REMEMBER: 1 new Free Glider with each kit in Group! 1 new Celluloid "Prop" given with each \$1 and \$1.50 kit! Each kit in each Group packed in snappy "Gift" Box. HURRY! ORDER your "Gift Group" now—and save money!

See Free Cement Offer On Other Side of This Page Before You Order—Then Order On Coupon Below!

### New, Fast RED RACER!

We're selling thousands of this new, original, exclusive Comet-designed Red Racer! "Speed" all over it! See that actual color photo! You can't resist those beautiful lines—the fast, sleek lines of a Comet FLY ABILITY! Special Comet Insignia, too! EASILY BUILT! Jet-black cell, wheels, flaming red colored body, wings! Your Red Racer is waiting for you in brilliantly colored box, with Free Glider, Free Cell, "prop"—all for only \$1 prepaid! Quick, order!

### COMET Model Airplane & Supply Co.

3114 Harrison, Dept. M-122, Chicago, U.S.A.

#### C.O.D.

Send me kits C.O.D., or "Gift Groups" checked below. I'll pay postage for kits, plus few pennies postage, C.O.D. fee, on delivery! Comet guarantees satisfaction!

**CASH**  I enclose \$..... for kits or "Gift Groups" I am checking below. Comet pays postage. Comet guarantees satisfaction! **NOTE:** Use money order to remit cash. If you send check, add 1¢ extra for exchange. CANADA: No C.O.D. Send cash by International money order. Add 20% to order amount.

#### CHECK "GIFT" GROUP or Kits Wanted

Group 1	Group 2	Group 3	Group 4	Group 5	Groups 6
Group 7	Group 8	Group 9	Group 10	Groups 11	Group 12
Group 13	Group 14	Group 15		CATALOG.	3¢ stamp

[ ] Dipper, [ ] Pursuit, [ ] Howard, [ ] Zipp, [ ] Dart,

[ ] Red R., [ ] Bullet, [ ] Curtiss, [ ] U. S. Navy R.

SATISFACTION GUARANTEED!

**NEW!** Amazing 24-Page Color Catalog GIVE

with each group, new customers, or

send 3¢ stamp, or

mailing cost. Shows

ALL planes in FULL

size. Detailed

descriptions, illustrations, supply left,

as act! Show to Dad

or mother for Xmas.

Gift idea!

"MERRY XMAS"

**COMET**

SANTA CLAUS SAYS:

"All over the world I've seen your Comet planes FLY! You will make thousands of happy this Christmas with fly like the North Wind! I can imagine how thrilled any fellow will be to get a 'Gift Group' of 3 Comet Kits, each packed in its brightly colored 'gift' box. I'll do my share and give you customers real quick service!" (Signed) S. Claus, North Pole. NOTE: All planes on this page shown in full, true colors!

**COMET** **U.S. NAVY RACER**  
FLYING SCALE MODEL  
**LOOKS GOOD** **FLIES FINE**  
MANUFACTURED BY THE COMET  
MODEL AIRPLANE & SUPPLY CO. CHICAGO

How'd ya like to get this big, beautiful U. S. Navy Racer, packed in this big, gleaming, silver, red, blue "Gift" Box, Xmas Day or any day! All Comet Kits are neatly packed in strong, handsome-colored boxes. Give—and get—Comet Kits for Xmas! FAST SHIPPING SERVICE GUARANTEED!



### "My Comet DIPPER FLEW 900 FEET!"

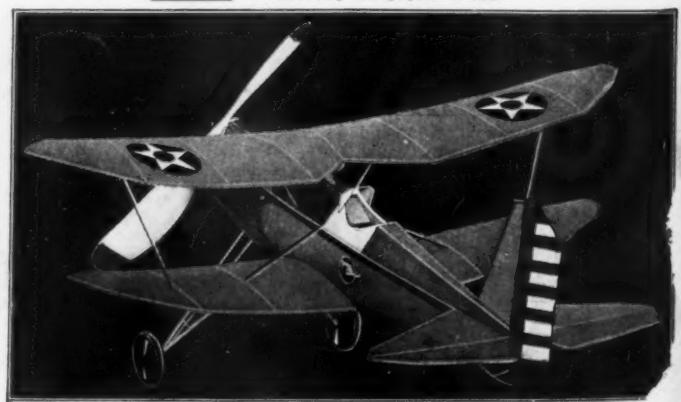
It was packed THE BEST and best material I ever saw! (Bob Latas, Colo.). Amazing Dipper weighs 1/3 oz., rises off ground, flies hundreds of feet

75¢

Prepaid or at Dealer's

### NEW ARMY PURSUIT "FLEW 1500 FEET"!

Looks like real Army biplane big "Gift" box with Free Glider. A sensational flyer! Order it in one of the "Gift Groups" and save money! Order now!



PRINT NAME .....

PRINT STREET .....

SEND NO MONEY—SEND COUPON! FAST SERVICE

50¢  
Prepaid or  
at Dealer's

